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An Address
ON
CARDIAC DEBILITY AND CARDIAC DILATATION.

Delivered before the Bradford Medico-Chirurgical Society at the Annual Meeting on Dec. 19th, 1911,

BY G. A. GIBSON, M.D. EDIN. & DUB., LL.D.,
PHYSICIAN TO THE ROYAL INFIRMARY, EDINBURGH.

GENTLEMEN,—The opportunity of meeting you, which your kind invitation furnishes, is very welcome to me; not only because it permits me to renew some old friendships, but also since it provides an occasion for expressing some views on certain forms of heart disorders which have been much in my mind of late. Some of the recent work to which reference will be made in the following remarks has been carried out in the new clinical laboratory of the Royal Infirmary of Edinburgh; and as the observations to be so utilised form the first-fruits of our labours, it is only right that our grateful thanks should be warmly acknowledged to the anonymous and munificent benefactor, to whose public spirit we owe the privilege which we now enjoy.

My intention in the following address is to deal with debility and dilatation of the heart, firstly as regards our means of recognising the conditions; this will lead us, secondly, to consider the modern explanation of their production; and we shall then be in a position, finally, to give our attention to their management, both in respect of prevention and relief.

DIAGNOSIS.

The size of the heart still furnishes indications of the most important kind in respect of dilatation, whether acute or chronic. It may be ascertained by the older methods of physical examination; but it is always advisable that these should be supplemented by modern means. The cardiac impulse may give distinct evidence, not merely in a displacement of the visible apex beat to the left, but in the presence of preternatural pulsation both to left and right of the sternum. It is not to be forgotten that in many cases of dilatation the apex beat is not visible at all; while in others—and this is especially the case where dilatation of the right ventricle is the predominating feature—the apparent apex beat may actually be inside of its normal position. In this latter instance tracings show, as might be expected, an inverted impulse in a large number of cases. Even when the cardiac impulse cannot be seen, it can almost invariably be felt, and its position will be found to agree with the statements just made as regards the visible impulse. Palpation affords most useful information in regard to the force of the impulse; and it may be said, as a general rule, that when there is displacement outwards, without increase of intensity of the sounds, dilatation with little or no hypertrophy may reasonably be diagnosed; while, on the other hand, if the impulse is at once of greater strength and longer duration, more or less hypertrophy may with certainty be assumed.

The area of deep cardiac dulness is enlarged to a variable extent, but in most instances especially towards the left and downwards. In certain cases the enlargement is more particularly to the right, and this fact is more commonly observed when the cause has lain in some morbid condition of the respiratory system. In acute dilatation these changes occasionally supervene with great rapidity, and sometimes the physical signs disappear almost as quickly as they come.

The form assumed by the heart in dilatation, especially as regards the right side, has occupied the attention of William Russell [1] and of Stacey Wilson,[2] to whose works a reference may be made for full details on this important subject.

The extent of superficial cardiac dulness may also be increased if the heart should be so enlarged in either direction as to displace the left or the right lung. It may be added that this is not a physical sign to which much importance should be attributed, seeing that antecedent pulmonary conditions might be an unsuspected cause of the pulmonary retraction.

The sounds in pure and uncomplicated dilatation are usually of higher pitch and shorter duration than those produced by normal hearts. There are many cases, however, in which the sounds are of greater intensity and longer duration than in health; and in these cases it may be confidently maintained that there is a considerable degree of hypertrophy, as well as of dilatation. It is not at all uncommon, on the other hand, to find that, although the sounds are rather high in pitch and clear in quality, they seem to be distant. Other changes in the sounds may be ascertained. The first sound may be extremely faint, while the second sound, particularly about the pulmonary area, may be distinctly accentuated. Either first or second sound may, further, be doubled. In addition to these alterations, murmurs previously absent may make their appearance. The causes of these murmurs we shall subsequently ascertain; all that need be said at this time is that these murmurs are invariably regurgitant, and that, in their order of frequency, they conform to the following sequence: (1) tricuspid systolic; (2) mitral systolic; (3) pulmonary diastolic; and (4) aortic diastolic. As regards the occurrence of such murmurs, it is only right to mention that the first author who dealt with functional incompetence of the cusps was Stokes,[3] and in this he was followed by Gouraud,[4] in respect of the right side of the heart, and by Balfour,[5] as regards its left side.

Functional Incompetence of Pulmonary Valves.

Functional incompetence of the auriculo-ventricular valves is now so thoroughly recognised, and has been so frequently dealt with, that no further reference to it need be made. It is somewhat otherwise, however, as regards the sigmoid cusps; and although it is true that since the observation of Chevers [6] functional inadequacy of these valves has been from time to time recorded, yet it is only within recent years that the matter has received sufficient attention. The diastolic pulmonary murmur of purely functional origin has been described by Steell,[7] Duckworth,[8] Barr,[9] myself,[10] Pawinski,[11] Preble,[12] Bryant,[13] Nixon,[14] Newton Pitt,[15] Thayer,[16] Hirschfelder,[17] and Rudolf.[18] In this enumeration the instructive case recorded by Stewart, when house physician with me, is not included, since it was doubtful whether the cusps were healthy or not. Several instances have been under my care during the last few years, and of these one is of sufficient interest to merit brief narration in this place:—

CASE 1.—A healthy-looking girl, aged 20, living with her parents in Donegal, with no occupation except a little house-work, was admitted to my ward on Sept. 24th, 1908, on account of pain in the chest and shortness of breath. Her parents, as well as her brothers and sisters, were in perfect health, and until three years before her admission the patient had never had a day's illness, excepting the usual ailments of childhood. Three years before admission she suffered from what appeared to have been a typical attack of erythema nodosum, and two years later she passed through an attack of dry pleurisy, which was considered to be of rheumatic origin. During a visit to Edinburgh she had a slight feverish attack, for which she presented herself at the Royal Infirmary and entered my ward. On admission she was found to suffer from palpitation as well as uneasiness, both symptoms being especially prominent on exertion. A cough occasionally troubled her, but from first to last there had never been any swelling of the ankles. Her appearance was that of perfect health.

The arteries were absolutely healthy; the estimation of the arterial pressure gave a diastolic level of 80 and a systolic of 95. The pulse-rate during the first two days after admission varied from 98 to 126; it was perfectly regular. There was no abnormal appearance in the cervical region; marked pulsation was observed in the second and third intercostal spaces to the left of the sternum, and also in the fifth intercostal space just outside the left mammary line. On placing the hand over the præcordia a well-marked thrill was felt, preceding the apex-beat at the apex; and in the second left intercostal space the closure of the pulmonary cusps could be distinctly felt. There was considerable enlargement of the heart at the level of the fourth costal cartilage; the right border was 1½ in. to the right, and the left border 4½ in. to the left of the middle line; while at the level of the fifth costal cartilage the left border of the heart was 5½ in. from mid-sternum. A short, sharp, presystolic murmur preceded the first sound at the apex; and the latter part of the first sound was obscured by a loud, rough, systolic murmur. Both murmurs were propagated for a short distance in every direction, but the systolic was continued to the axilla. In the pulmonary area the second sound was greatly accentuated, and was followed by a diastolic murmur, which was heard with its greatest intensity in the third intercostal space, an inch to the left of the sternal margin. The sounds persisted, with only slight variations, during the patient's residence in the ward; but sometimes the second sound at the base was reduplicated—in which case the diastolic murmur clearly followed immediately upon the second element of the doubled sound.

The examination of the blood gave 60 per cent. of hæmoglobin, 4,150,000 erythrocytes, and 10,000 leucocytes. The differential count of the leucocytes showed that the leucocytosis was of polymorphonuclear origin, the exact count giving 80 per cent. of these cells, 18 per cent. of small lymphocytes, and 2 per cent. of eosinophiles. A few crepitations at the bases of both lungs were the only evidence of any alteration of the respiratory organs, and there was no alteration in any other system of the body. After a couple of days the temperature became normal

and within four days the pulse-rate fell to about 70; the respiration, however, remained somewhat increased in frequency. The bases of the lungs rapidly cleared up, and a general improvement in the condition of the patient followed.

It was obvious that this case was one of mitral obstruction and regurgitation, taking its origin most probably in an attack of endocarditis, dating from the period when the erythema nodosum had attacked the patient. As the result of the mitral lesion, the increase of pressure in the pulmonary artery had led to stretching of the orifice and escape through its cusps. Fearing that the feverish symptoms for which she sought admission might possibly lead to a fresh attack of endocarditis the patient was kept absolutely at rest, and it was well that this care was exercised, as on Oct. 26th an attack of tachycardia set in, which lasted until Nov. 4th. This was attended, on one day, by a temperature of 100°, otherwise the temperature was unaffected. The pulse remained rather above the normal for two weeks after this and then settled down; but on Dec. 1st it again began to rise, and varied from 80 to 110 for many days—in fact, until the middle of January its rate was persistently high; indeed, on two occasions it attained the level respectively of 140 and 126. On the first of these occasions the temperature rose to 100·8°, and on the second it was 99·8°. After this the patient considerably improved and was able to return to her home on Jan. 20th. By the kindness of Dr. Murnaghan, of Dungloe, information has been recently communicated to me regarding the patient. It is satisfactory to know that the diastolic pulmonary murmur has entirely disappeared.

Functional Incompetence of Aortic Valves.

Functional incompetence of the aortic cusps is of rarer occurrence than at the pulmonary orifice. The aortic orifice has such a strong, fibrous ring that it is most unlikely, at first sight, to permit of regurgitation, except from permanent stretching. My own position as regards this matter was for long one of possibly rational, but certainly exaggerated, scepticism. Wider experience has led me to modify the opinion expressed some years ago, although I am not yet able to coincide in the belief of Babcock[19] that functional escape is frequently encountered. Cases have been described by Peacock,[20] Perls,[21] Besnier,[22] Cockle,[23] Pel,[24] Chauffard,[25] Finlayson,[26] Bouveret,[27] Renvers,[28] Klein,[29] Dombrowski,[30] Bonnet,[31] Pitt,[32] Gairdner,[33] Cabot and Locke,[34] as well as myself[35] and Anders.[36] A most interesting example of such functional incompetence which came recently under my care may be described in this connexion.

CASE 2.—A hammerman, aged 47, recommended to me by Dr. P. Murray, of Leven, presented himself on April 1st, 1908, complaining of a noise which he heard over his heart. His family history was of no importance in respect of circulatory affections, and he had not suffered from any previous illnesses which could influence the condition for which he sought admission. His work had been somewhat heavy, but rather intermittent; his surroundings at home had always been satisfactory; he pleaded guilty, however, to considerable excess as regards alcohol on the Saturdays.

Eighteen months before entering the ward he began to notice "a cheeping noise," as he called it, in his chest. He only heard it at first when he was exerting himself or was excited. The noise gradually became louder, and during the 12 months before he entered the ward when he first lay down in bed it was so distinct that he was unable to sleep. Latterly it was accompanied by palpitation. At the time of his admission each member of my staff could hear a distinct harsh, musical murmur when standing about a yard away from the patient. The further investigation of this murmur will be taken up in its proper place.

On examination there was slight cyanosis, the lips being rather blue in tint; there was some pulsation at the root of the neck and in the episternal notch. The arteries were soft and compressible everywhere, without any trace of thickening. The systolic pressure at the time of his admission was 145, the diastolic 95 mm. Hg. A sphygmographic tracing showed no increased celerity; the amplitude of the pulse wave was small and the rhythm was regular. No apex beat was visible, but on palpation it could be felt in the fifth intercostal space 3½ inches from midsternum; the upper border of the heart was at the lower edge of the third left costal cartilage; the right border at its most external point was 1½ inches, and the left 5½ inches, from midsternum. On careful auscultation, at the time of his admission, the loud, musical murmur previously referred to was heard all over the præcordia. It was diastolic in time, and had its maximum intensity just below the conventional aortic area; no other murmur could be detected. The first sound was somewhat low-toned and thumping in character. With a few days' rest in bed the murmur absolutely disappeared. When he sat up in bed a faint trace of it could be detected, which again disappeared after a short period of rest in the recumbent position. After walking about the ward for some minutes the murmur became louder, and with a little exertion was distinctly audible to the patient himself.

It occurred to me that it might be of interest to find out the relation between the arterial pressure and the murmur. After quiet rest in bed the maximum arterial pressure was found to be 115, and with this pressure no murmur was audible; with gentle exertion the arterial pressure rose to a level varying from 125 to 135, and a soft diastolic murmur developed; after more active exertion, such as walking quickly three times round the ward, the maximum arterial pressure rose to 145, and the murmur became so loud and musical that the patient himself could hear it. It was obvious that in this case there was, with rise of pressure, not merely stretching of the fibrous and elastic tissues forming the aorta, but also of the muscular fibres surrounding its origin.

Radioscopy and Radiography.

The results of investigations by modern methods have greatly helped us in the recognition of cardiac dilatation. By the use of radioscopy and radiography we have been put in possession of a means by which we can confirm and correct the evidence obtained by inspection, palpation, and percussion. The increased size of the heart may be appreciated by the use of the fluorescent screen at different angles, so as to ascertain which particular part of the heart is specially enlarged, while permanent evidence of the same kind is obtained by skiagrams, taken in various positions. Some of the results are shown in the accompanying illustrations (Figs. 1 and 2), for which my thanks are due to my colleague, Dr. W. Hope Fowler. Of equal importance are the results furnished by the use of the orthodiagraph. The instrument which is employed in our clinical laboratory is the modification devised by Groedel. Admirable tracings of the exact outline of the heart are obtained by the use of this apparatus, and some of these, for which I am indebted to my colleague, Dr. W. T. Ritchie, are now reproduced (Figs. 3–6).

Some caution is necessary in studying skiagrams and orthodiagrams, as they almost invariably give a smaller size than may be expected from the results of percussion. If the results of percussion, however, are measured as if projected on a plane surface, instead of a curve, the size obtained by both methods is much more nearly identical.

Electrocardiograms.

There are frequently disturbances in the action of the heart, as well in acute as in chronic dilatation. Changes in the rate of pulsation are common, and tachycardia is especially met with. The increased frequency of pulsation is often perfectly rhythmic; sometimes the pulsation may present bigeminal or alternating characters, and from the irregular occurrence of extra systoles there may at other times be complete arrhythmia. Two electrocardiograms (Figs. 7 and 8) may be introduced, showing the presence of extra systoles. Fig. 7 is accompanied by a graphic tracing taken from the vessels of the neck. In both figures the extra systole is marked "Ex." (Figs. 7 and 8).

Sometimes cardiac dilatation is attended by bradycardia; this, however, is mostly in elderly patients, with chronic dilatation from organic changes in the heart muscle; when it occurs in younger people it is usually due to toxic influences. Sometimes the bradycardia depends upon partial or total blocking of the auriculo-ventricular impulses; this may be recognised by comparing the pulsation of the cervical veins with the apex beat or radial pulse, and corroborated by hearing auricular sounds independent of the ordinary first and second sounds of the heart. The condition may be seen beautifully by means of radioscopy—two, three, or more pulsations of the auricles occurring to each ventricular systole. Graphic evidence of the condition is given by simultaneous tracings from the cervical veins and cardiac apex. It may also be obtained by some form of electrometer.

Some years ago, when we were beginning the study of heart block, the apparatus employed in my ward was the capillary electrometer; but more recently all our tracings have been obtained with the string galvanometer. These instruments, by demonstrating the presence of the electric changes attendant upon auricular as well as ventricular contraction, give us valuable evidence of the interruption of the auriculo-ventricular impulses. An excellent electrocardiogram obtained by the string galvanometer in our Clinical Laboratory, by Dr. Ritchie and Dr. D. Halliday Croom, is here shown (Fig. 9).

In certain chronic cases of cardiac dilatation the tumultuous or delirious action of the auricles, now often termed fibrillation, may be demonstrated by graphic records, both of the movements and of the electro-motive changes. As a matter of historic interest, a tracing from one of the earliest cases studied by modern methods in my own wards and published in 1906[37] is here presented (Fig. 10), and along with it an electrocardiogram of the same condition, for which my thanks are also due to Dr. Ritchie and Dr. Croom (Fig. 11).

Measurement of the Energy of the Heart.

Attempts to ascertain and to register the energy of the heart in cases of weakness, strain, and dilatation of the heart have often been made, so far without any results of value. This subject engaged my attention several years ago and a good many observations were made in my wards, as described in an address at Norwich.[38] The method employed was the measurement of the electro-motive force. The capillary electrometer was utilised, along with a scale in the microscope, in order to determine the amplitude of the

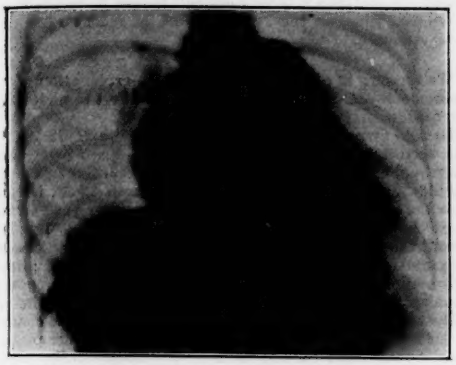

FIG. 1.—Skiagram of enormous dilatation of heart as seen from the front.

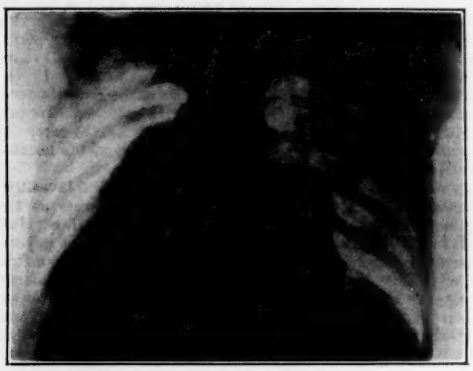

FIG. 2.—Skiagram of the same patient as in Fig. 1 seen from behind.

FIG. 3.—Orthodiagram of heart, approximately normal in size.

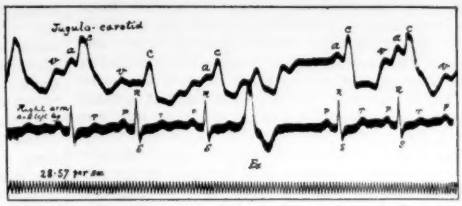

FIG. 7.—Graphic tracing from vessels of the neck and electrocardiogram showing the presence of an extra systole.

FIG. 4.—Orthodiagram of heart, slightly dilated to the right and extending further downwards than normal.

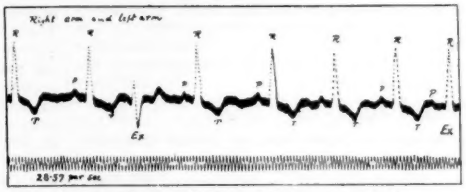

FIG. 8.—Electrocardiogram showing extra systole.

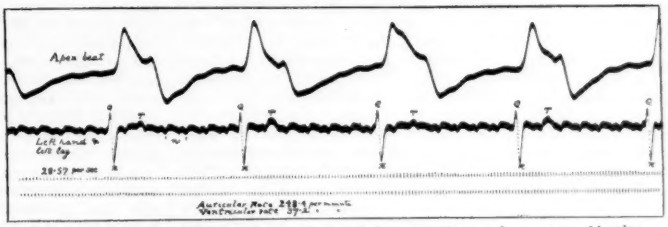

FIG. 9.—Graphic tracing from the apex beat and electrocardiogram from a case of bradycardia, due to total auriculo-ventricular heart block.

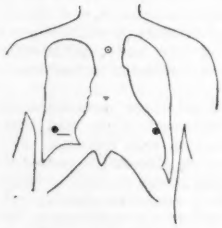

FIG. 5.—Orthodiagram of heart considerably enlarged in both directions.

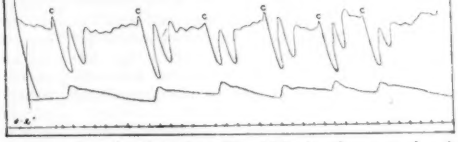

FIG. 10.—Graphic tracing from jugular vein and brachial artery in a case of auriculo-ventricular heart block, published in 1906. It shows the condition often termed auricular-fibrillation.

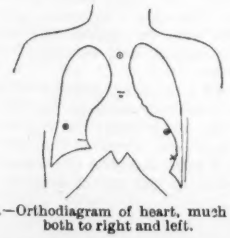

FIG. 6.—Orthodiagram of heart, much dilated both to right and left.

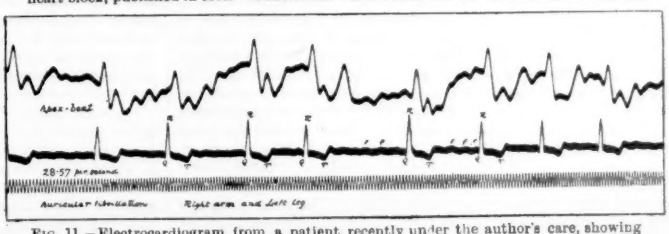

FIG. 11.—Electrocardiogram from a patient recently under the author's care, showing auricular fibrillation at the parts marked *f f f*.

oscillations. It was found, however, that while it was not difficult to measure the size of the movements, the varying resistances in the different persons who were at that period examined presented insurmountable obstacles in all such observations and the attempts were abandoned. In our Edinburgh Clinical Laboratory, with the string galvanometer and several important additions and modifications, it appears quite probable that we shall, before long, be able to carry out my long-hoped-for measurement of the energy of the heart—or at least to obtain an approximation to this.

It was a matter of great interest to me to find investigations on the subject of cardiac energy in progress at the clinical laboratory of the University of Berne on my last visit in 1909. Sahli [39] has, in several most suggestive papers, brought forward his method of sphygmobolometry, by means of which he believes he is able to estimate the energy transmitted by the pulse. The methods which he advocates are of the greatest interest; but although their author was kind enough to show me the whole procedure which he has adopted, time has not yet permitted me to give the subject sufficient study to be able to express an opinion as to their real value. This it is hoped may, before long, be possible. Christen [40] has also worked on somewhat similar lines. My position, unfortunately, in regard to his methods is also one of an insufficient knowledge of details and results. The physical basis of both modes of investigation consists in a calculation of the arterial volume, the blood pressure, and the pulse-rate. To my own mind it appears rather doubtful whether some of the factors concerned can be even approximately estimated with the means now at our disposal.

In this place a passing reference may be made to the fact that there is no definite relation between the height of arterial pressure and the amount of cardiac energy. The healthy heart, with abundant store of energy, is usually associated with low pressure; the failing heart, with scanty reserve of power, is often embarrassed by high pressure. The other factors maintaining the pressure, especially the resistance in the arterioles, are very largely independent of the condition of the heart.

Various Signs and Symptoms.

In addition to the increased area of visible pulsation, whether to left or right of the sternum, there is very frequently distinct venous pulsation in the veins of the neck; and from the type of the pulsation—whether auricular and physiological, or ventricular and pathological—we are able to divine the condition of the right auricle and of the tricuspid orifice. In a number of cases, moreover, epigastric pulsation, whether produced by the impact of the heart upon the upper surface of the liver, or by an expansile pulsation of that organ itself, renders useful help.

Many attendant symptoms are present, in addition to the disturbances already mentioned, such as palpitation, faintness, uneasiness, giddiness, visual and auditory symptoms, irritability, insomnia, and inability for ordinary duties. Such subjective symptoms are frequently attended by varying degrees of cyanosis, with passive hyperæmia and general œdema. The congestion and dropsy vary in their distribution according to the side of the heart which is mostly affected. In left-sided lesions the pleura and lung may furnish evidence of hydrothorax and œdema, while in right-sided affections the liver is apt to be enlarged and the abdomen to show ascites, while the legs are more particularly liable to show some anasarca. In these latter cases, moreover, the renal secretion is likely to be scanty and concentrated. In both classes there is usually weakness of the nervous and muscular apparatus.

The diagnosis of dilatation is in itself not difficult when the condition is pronounced. It is by no means so easy to determine in less degrees whether the patient is suffering merely from weakness of the muscle or from dilatation of the cavities. Unless there is clear proof that the heart is enlarged we are not at liberty to decide that dilatation is definitely present; but weakness of the heart may be diagnosed if murmurs of escape are developed on exertion, if the cardiac response is lessened, if the patient shows that the circulation is easily exhausted. From such a condition as this to one of distinct dilatation there is an unbroken chain of many links. Another matter which not infrequently demands our attention is the question in certain patients as to the length of time during which the condition has probably lasted. Sometimes it is very difficult indeed to decide in any given case whether the symptoms are of recent origin or of older standing.

CAUSATION.

We are now in a position to attempt an explanation of the phenomena—in other words, to make an effort to understand the causation of weakness and dilatation.

Dating from the observations of Louis [41] and Stokes, [42] it has been known that acute infectious diseases bring about grave changes in the muscular tissues, resulting in cardiac debility. Although undoubtedly pyrexia, in itself, is quite capable of producing such muscular changes, yet the real cause for all practical purposes lies in toxæmia. This may attend the most varied acute and chronic disorders. Chronic suppuration of the gums, of the throat, of the skin; acute and chronic catarrh of the mucous membranes, bronchial, alimentary, or urinary; as well as acute and chronic inflammatory affections of internal organs,—all these lead to changes in the myocardium. Every form of anæmia, whether primary or secondary, and all affections of the blood-forming tissues lead to similar alterations. The changes in the heart attendant upon increased thyroid secretion have long been recognised, while feebleness produced by suprarenal disease has also been known for many years. Bruce and Ritchie [43] have recently shown us that, in a very large number of febrile disorders—e.g., diphtheria—there are very definite changes in the suprarenal bodies. In the early stages of acromegaly the heart usually shows increased energy; but, as is now well known, in its later phases there is great weakness, not merely of the myocardium, but of the whole muscular tissues. It has long seemed to me that these changes depend upon varying activity of the pituitary body.

Whether purely nervous causes are sufficient in themselves to bring about myocardial effects seems to be a moot question. Excesses, whether laborious occupations or exhausting amusements, are undoubtedly factors in cardiac dilatation. Their action is probably complex, the effect of continued high arterial pressure; the influence of fatigue of the nervous mechanism; the agency of exhaustion of the glandular apparatus, and with these very often the entrance of toxic substances. Here let me observe that in patients with weak hearts the use of tobacco is decidedly pernicious. In many of them the pressure rises after even one pipe of mild tobacco, the diastolic reading being elevated from 10 to 20 and the systolic from 15 to 35 mm. Hg above its previous level. Such a rise of pressure explains the common experience that feelings of tightness and throbbing in the chest, with faintness and giddiness, are apt to be produced in patients of this type.

Vascular crises, sometimes induced by changes in the internal secretions, but often caused by the retention of waste products, give high arterial pressure, the secondary result of which is to bring about cardiac strain. This is much more likely to be the case in instances where the heart is already feeble. As to crises of low pressure, we are not yet in a position to express a definite opinion, but there can be no doubt that sudden falls of pressure brought about in this way lead to disturbances of rate and rhythm which are hurtful to the nervous and muscular apparatus of the circulation.

As regards the bearing of all these facts upon the production of dilatation, it may safely be said that some modification of the old ideas is now required. The conception that some obstacle to the circulation caused the persistence of a residuum of blood in one or other of the cardiac cavities, which, by preventing complete systole, led to a stretching of the muscular wall, is not sufficient in the light of recent investigations, and we shall seek in the sequel to attain to a more thorough understanding of the whole matter. The relation of dilatation to hypertrophy is of immense importance, but it is not a subject which comes within the scope of the present address. My late house physician, Professor H. A. Stewart, of Columbia University, who has already done such admirable work on cardiac pathology, is at present engaged on this subject, and we expect before long some results of great value.

Graham Steell, [44] in a very interesting address on Heart Disease and its Treatment, entirely accepts the view of Roy and Adami that a rise of pressure in the arteries diminishes the extent to which the fibres of the heart are shortened during systole, and thus increases the quantity of residual blood in the ventricle at the end of systole. The

association, therefore, of imperfect systole and cardiac dilatation is, according to Steell, a definite one of great importance.

Experiments on the Valves of the Heart.

That the valves on the right side of the heart are more easily rendered incompetent than those of the left was recognised by John Hunter,[45] who evidently concluded that this was a provision of nature to render the general circulation "more perfect than that through the lungs," but the subject seems to have attracted little notice until the investigations of Robert Adams.[46] In one paper, which has been a rich mine of information for all subsequent workers at cardiac pathology, he showed clearly that the more easily produced incompetence on the right side of the heart is a means whereby what is necessary towards the maintenance of the systemic would be injurious to the pulmonic circulation, since so many causes must temporarily retard the passage of blood through the lungs. Wilkinson King,[47] just ten years later, published his excellent paper upon the "safety-valve action of the tricuspid valve," by means of which regurgitation is permitted. My mind being much impressed by the results of these far-sighted observers, the subject occupied my attention for a long time about 30 years ago. As the average result of a long series of experiments made with the hearts of different animals just after death, before changes of any kind could have set in, and while the hearts therefore still retained their vital functions, some very interesting conclusions were reached.[48] Testing the valves with a column of fluid of the same specific gravity as ordinary blood, it was found

That from the semilunar valves of the pulmonary artery of the sheep a strong jet escaped until the column of fluid reached 14½ in., from which height it trickled until the valves became competent with a column of 9 in. In the ox a strong jet was emitted down to 12 in., and dropping of the fluid reduced the superincumbent column to the height of 6 in., when competence was established. In the healthy human heart a jet escaped down to 13 in., and the valves were competent with 8 in. of fluid resting on them. Now, in each case of the pulmonary valves with a column of fluid exceeding 6 ft. in height, perfect competence was obtained in a very simple manner by constricting the pulmonary artery. A cord tied round the artery, exactly at the attachment of the valves, gave the means of perfect control over the escape, so that, by varying the amount of tightening, the jet was converted into a drop falling quickly or slowly, and this in turn was totally stopped. The whole diminution of circumference only amounted to a few lines. This shows clearly that the escape is caused by distension of the elastic artery and relative incompetence of the valves.

From the tricuspid valves of the sheep a strong triangular jet spouted out, with a column of fluid over 13 in. in height, and from this point the fluid slowly escaped by flowing over the valves until all escaped. In the ox the jet ceased when the column of fluid fell to 10 in., and from this point the fluid likewise ran out. In the healthy human heart the triangular jet gushed out until there were 12 in. of fluid left, and then the remainder flowed over the valves. The valves closing the right auriculo-ventricular orifice, therefore, seem always incompetent after death. Now, it is quite evident that experiment on the heart after death cannot be applied rigidly in explanation of action before death, yet a certain amount of light may be thrown thereby on it. Such experiments show with certainty that the orifices of the right side of the heart are not closed so perfectly as those of the left, and point to the ease with which they probably allow escape with any supernormal pressure.

At the time of these investigations the profound significance of their results did not occur to me, and their deeper meaning was only recognised at a later period.

Quite recently similar experiments have been carried out by Rudolf,[49] who says:—

We have tried a number of hearts in the same way, and on the whole with about the same results. ..... No one believes that the normal pressure ever makes a normal pulmonary valve leak, but if the pressure be raised or the tissues be relaxed, then dilatation of the artery may and can often be demonstrated to have occurred; and if the orifice shares in this stretching, leakage may be produced even to a sufficient extent to cause a murmur, such a yielding of the orifice being no doubt largely due, as Stewart and Keith have urged, to a want of tone in the muscular ring just below the orifice.

Stewart[50] found, from a series of experiments upon the ring fibres of the aorta and pulmonary artery, that by cutting the muscle just below the level of the valves, but leaving the cusps intact, it was possible to produce most distinct diastolic murmurs. These experiments have not yet been published *in extenso*, and the investigations are still being pursued. We may hope before long to have a full description of the results.

The very interesting experimental studies on the origin of cardiac murmurs carried out a few years ago by Thayer and MacCallum,[51] have shown us how very easily murmurs may be produced by slight degrees of dilatation. More especially important was the production of a functional aortic insufficiency, supporting entirely the conception that the muscle of the left ventricle plays a most important part in the closure of the aortic valve.

Functions of the Heart.

We have now seen how cardiac weakness—whether due to general causes or local conditions—and cardiac strain—sometimes the result of sudden stress, at others of prolonged effort—have gradually become accepted as causes of dilatation. The investigations of Hunter, Adams, myself, Thayer and MacCallum, and Rudolf have taught us a great deal in regard to the effect of stress. But something more is wanted in order to attain to a scientific conception of the real causes of dilatation. The investigations which introduced a new era in cardiac pathology are those of Gaskell.[52] His remarkable contributions showed that the activities of the heart might be divided into five different functions—rhythmicity, excitability, conductivity, contractility, and tonicity; he further showed that interference with the heart's action might be produced by a modification of any one of these properties. He also demonstrated that the different parts of the heart possessed peculiarities of their own, but that in these there is merely a question of degree and not of kind. In this investigation he was followed several years afterwards by Engelmann,[53] who, as it were, systematised these interesting discoveries by assigning to the increase or decrease of each different function a distinctive term. It is perfectly true that certain authors—e.g., Lewis[54]—seem rather sceptical about the practical utility of a strict separation of the five cardiac properties as furnishing but "an insecure foundation for the classification of cardiac irregularities." In connexion with the subject of cardiac dilatation, nevertheless, they are of the greatest importance. The two functions which mainly concern us are those of contractility and tonicity, but excitability and conductivity are found to be modified.

Keith's[55] most suggestive observations greatly help us to understand the bearing of tonicity upon the maintenance of the normal size of the heart, especially of its orifices. He shows that the muscular tissue of the bulbus arteriosus in the lower vertebrates consists, not in discharging, but in regulating fibres, which maintain their tonicity when the former, having finished their work of expulsion, pass into the condition of diastole. He expresses the opinion that this seems also to be the case with the mammalian heart. In this way the aortic and pulmonary cusps are rendered competent.

Another most interesting point which Keith brings out in his Hunterian lectures is that, although the sinus venosus is absorbed as part of the right auricle, and the single opening originally present is subdivided into that of the superior vena cava, the inferior vena cava, and the coronary sinus, the venous orifices are closed by the action of the modified muscular tissue. This, as Keith points out, is derived from the musculature of the auricular canal, which has been shown by MacWilliam[56] for the eel, and by Gaskell[57] for the tortoise, to be more easily stimulated than the muscle of the auricle proper. The orifice of the superior vena cava is closed by the two taeniæ, which together form a band, shaped like a horseshoe, encircling and closing the venous orifice. The orifice of the inferior vena cava, which is almost, if not quite, double the size of the superior, is closed by the drawing inwards of the anterior margin, which meets the inner or septal margin.

In another contribution of the greatest value Keith[58] distinguishes between the functions of the circular and longitudinal sets of fibres in the heart, proving that they are antagonistic in action, and that, while the circular set is concerned in expulsive functions, the longitudinal is occupied in regulating the systolic movement of the auricle and ventricle.

For the first clinical application of the results obtained by Gaskell and Keith we have to thank Mackenzie,[59] who very clearly states, not only that dilatation of the heart is to be regarded as an expression of diminished tonicity, but that the various regurgitant murmurs, so often regarded as functional, are also produced by depression of this important function. In his very interesting paper Mackenzie applied the embryological observations of Keith (to which reference has just been made) to the problems of dilatation and regurgitation, and he also definitely showed that my own investigations into the functions of the cardiac valves lead up to the same conclusions.

Porter[60] tells us that when tonicity is increased excitability, conductivity, and contractility are reduced, while the

converse is equally true—if these three latter functions are increased tonicity is apt to be reduced.

In another paper Porter[61] also throws out a suggestion, which may very probably prove to be correct, that muscle exhibits two different kinds of contraction when stimulated, the one resulting in ordinary shortening, the other in tonus production. These different kinds of contraction may be excited together or separately, some kinds of stimulation affecting one and some the other. Porter also suggests that tone exhibits no refractory period and is directly proportional to the strength of the stimulus, while the ordinary contraction has a refractory period and, provided the stimulus is maximal, is independent of its strength. In some suggestive papers Gossage[62] has applied these observations of Porter to clinical medicine, and a number of the cases which he describes undoubtedly indicate that increase of tone has often the effect of diminishing excitability, conductivity, and contractility.

Clifford Allbutt[63] suggests that tonicity does not probably depend on the tissue itself, but on a continuous stream of energy from the nervous system "whereby a tension curve, in steady concert with the other coefficients, is maintained—a curve lying far within the elastic limits of the particular tissue." He points out that mere fatigue of a muscle, or other animal fibre, cannot be compared with fatigue in a metal; in animal tissues it only implies functional abeyance—the molecular structure being virtually intact; in a metal it means molecular disturbance and a new set. Clifford Allbutt goes on to ask, What are the "elastic limits underlying the tone of animal fibres"? With most of us who have ever applied our minds to the subject, he concludes that the limits vary widely with the nature and the age of the tissue; that in youth the limits are essentially wide, while with advancing years they become gradually narrower. It may be mentioned in this connexion that when the coronary arteries have escaped degenerative changes the muscular tissue will, in all probability, retain much of its primitive integrity, but if their muscular tunic has been exposed to toxic influences or the constrictor nerves have been kept in excessive action interstitial myocarditis, arising along the course of the finer branches of these vessels, spreads throughout the heart, and destroys the powers of tonicity with which the heart was originally endowed.

We now possess physiological proof of the belief for which many of us have long contended as regards the coronary arteries. It has often been stated, even so recently as two moons ago, by Verdon[64] that the coronary arteries possess no innervation. But the coronary arteries are accompanied by nerves, very fully described by Morison.[65] Just about a month ago Brodie and Cullis[66] have, by means of adrenalin studies, proved that the coronary arteries possess both vaso-constrictor and vaso-dilator fibres, which are derived from the sympathetic nervous system. The vaso-constrictor functions are more powerful than the vaso-dilator. This beautiful experimental demonstration of the accuracy of convictions based upon clinical observation is of the greatest value.

Stages of Evolution of Cardiac Debility and Dilatation.

It is possible to recognise different stages, as it were, in the evolution of cardiac debility and cardiac dilatation. We frequently see patients with feeble heart-beat and weak heart sounds in which it is impossible by any methods to determine the least increase in size, and in which there is absolutely no murmur denoting escape. In many of these cases a diminution of contractility seems to me the most important element, but it is impossible to say whether tonicity is affected or not.

In a second group of cases we find, both by percussion and by the various applications of the X rays, that the heart is large, the sounds are high-pitched and of short duration, but no murmurs are present. In such cases, probably with some diminution of contractility, there is loss of tone in the general muscular substance of the heart, but not in the ring fibres surrounding the orifices.

In a third class there are patients with large hearts and murmurs of escape at the mitral and tricuspid orifices, in which we may assume that tonicity has suffered considerably more than contractility.

In a fourth division there are large hearts with feeble, fluttering impulse and no murmurs, in which there is not sufficient contractility to produce murmurs, and in which the tone of the muscle has suffered very severely.

In the development of these different degrees of cardiac inadequacy, beginning with simple weakness and ending in extreme dilatation, the effect of strain must never be lost sight of. As was so well expressed in a contribution by Bristowe,[67] an amount of work which a healthy heart can overtake with ease may produce serious effects on another which is weakened. It is not merely physical exertion which produces heart strain in conditions of debility; any departure from the normal which induces increased resistance to the exit of blood by the arterial channels, whether aortic or pulmonic, is quite sufficient to bring about dilatation of one or other, or both ventricles.

The contrast afforded by the behaviour of healthy cardiac muscle, resisting the tendency to stretching by its inherent tonicity, and that of cardiac muscle which has, in a considerable degree, been replaced by connective tissue, is very striking. As a matter of simple physics, the latter may afford a higher degree of resistance to stretching; but, once strained, it has but little power of a return to the normal, while the healthy muscular fibres, although possessing less direct resistance to deformation, are endowed with a far greater possibility of a return to the normal size and form on the removal of the stress. In this lies the essential difference between the heart of youth and that of age.

Many functional tests of cardiac efficiency have been devised during recent years to which it would be most useful to give some attention did time permit. As a consideration of these methods of investigation would lead us far afield and altogether away from the immediate purpose of this address, it is only necessary to refer to the work of such authors as Herz[68] and Katzenstein[69] which has recently been admirably summarised by Hirschfelder.[70]

TREATMENT.

The practical aim of these remarks is concerned with the management of cases of weakness and dilatation, and the treatment of such cases certainly demands the most sedulous attention. It is a matter which not only requires our earnest consideration, but which also amply repays our efforts by abundantly satisfactory results.

Importance of Rest.

First and foremost amongst the means which we have at our disposal is the vital necessity of rest. It has been universally recognised for many years that, in cases of endocarditis, absolute repose is demanded for a period of at least two months, and that, even after that, life must be very easy for a long time. It is, perhaps, not so fully granted that, in cases of myocardial debility, a lengthy interval must be allowed to elapse before the patient is permitted to return to anything like ordinary duties. After many apparently simple febrile disturbances, so common in all countries, the heart is frequently left in a feeble condition, and many months must pass before the heart muscle is subjected to any stress. When the heart has actually become dilated, as the result of such an affection as influenza, for instance, it may be quite two years before the patient is able to enter upon his ordinary avocations. At first total rest must be enjoined, and this must be carried out in a well-ventilated room, with a good exposure. Still better, when it can be attained, one room may be used by day and another by night. The change from the one chamber to the other is certainly most helpful, particularly by inducing sleep. Failing this, two beds may be occupied, the one by day and the other by night, in the same apartment. Although this is not so satisfactory, it is certainly better than using the same bed both by day and by night.

Repose of mind, as well as rest of body, must if possible be secured. To this it is, unfortunately, not always possible to attain, as the mere fact of illness is in itself likely to induce quite the opposite of a peaceful mental condition; and as to the majority of mankind a serious illness is little short of a disaster, an easy mind is not to be come by in any way. It is therefore, above all things, necessary to furnish the mind with occupation of such a kind as will prevent it from preying upon itself. It must not, however, be overlooked that this employment of the mind should be with subjects which are not in themselves too stimulating. Subjects which are too exciting bring about excessive irritation of the brain cells, with a consequent rise of arterial pressure, producing the twofold result, first of nervous excitement, and afterwards of exhaustion; while at the same time the cardiac muscle is

placed in conditions of stress from the higher resistance to be overcome, and is therefore likely to undergo strain. It will never fade from my own remembrance as long as life remains, how, during convalescence from diphtheria, many years ago, my kind attendants essayed to cheer me up by reading "Treasure Island" (then a new work), with the most untoward results in the directions already indicated. The recollection of the immediate palpitation and the subsequent insomnia produced by Stevenson's charming work furnished a great lesson which never has been, and never will be, forgotten.

Diet and Exercise.

The diet of the patient will necessarily vary according to the conditions which have induced the weakness or dilatation, and it should be essentially different in cases arising in the course of some acute affection and in instances of chronic enfeebling disease, or in examples of strain occurring in previously healthy people. In every case, however, two great principles are useful to us—first, that the food which is allowed should have no tendency to cause distension of the stomach or intestines; and secondly, that it should not be of too highly nitrogenous a character. With the first of these two principles in view the separation of the more or less solid portion of the diet from that which is mainly fluid can easily be carried out. To meet the second, it is not difficult to avoid such articles of food as have a high purin content. In this way we steer clear of the use of substances which are rich in extractives. It is usually advisable, also, to limit the amount of animal fat administered, as it has with many the effect of producing a considerable distension. Sugar, on the other hand, is to be warmly recommended as an admirable muscular food, and one which but rarely causes any trouble to the primary digestion.

Closely bound up with the question of diet is that of exercise. There can be no doubt of the efficacy of some form of employment of the muscles. While the patient is kept strictly to bed we may easily, by means of massage, insure sufficient tissue changes in the muscular system through what we may call exercise without fatigue. Its effect must be carefully watched, as in many instances if it be not wisely employed it causes restlessness and sleeplessness, and thereby defeats our efforts for recovery. When judiciously administered it is most soothing to the patient and most beneficial in its results. Later on the masseur (or masseuse) will be permitted to give some passive exercises to the limbs, and here it may be said that the manual treatment of Stockholm is, from every point of view, better than the resisted exercises of Nauheim. At a subsequent period if all goes well the patient may be allowed to begin some active exercises, especially those combined with deep breathing, which is of immense service, both in thoroughly aerating the blood and promoting tissue changes and also by unloading the venous reservoirs and relieving the heart.

Cardiac Remedies.

It is only within recent times that the employment of cardiac remedies has been based upon pharmacological principles, instead of empirical deductions, and in many respects we are still only on the threshold of exact knowledge. A good deal, however, has been done to render our use of cardiac remedies more scientific than it used to be; while recent additions to the facts at our disposal have, in most instances, proved that the results of practical experience have been of definite value. Amongst recent pharmacological investigations into the effects of remedies on cardiac tonicity in mammals the painstaking research of Cameron[71] stands pre-eminent. His observations were made in the Hunterian Laboratory of the Johns Hopkins University at Baltimore, under the guidance of Dr. A. D. Hirschfelder. From the valuable results which he has obtained some of the remarks about to be made have been derived. They encourage the hope that by the reciprocal influence on each other of pharmacological investigation and therapeutical observation we may soon have clearer views of the whole matter than has hitherto been possible.

In cases of simple cardiac weakness the employment of the salts of calcium has proved, in my hands, to be of much efficacy, and the clinical use of the drug is now explained by the observations of Lingle,[72] Howell,[73] and Cameron. Calcium cannot start rhythmical contractions in the heart after it has been brought to a standstill; this requires a solution of some sodium salt. But the salts of sodium cannot maintain the action of the heart—it is necessary to employ the salts of calcium in order to sustain rhythmical action. The researches of Cameron show that the salts of calcium have a marked effect in increasing the tonicity of the heart, and they entirely bear out the utility of the salts in the treatment of cardiac weakness. For some years it has been my custom to use calcium chloride in this way. In the case of those who have any rhythmical disturbances, which appear to be especially the result of interrupted innervation, the combination of bromine with calcium has proved of remarkable value; while in patients, mostly of older age, who have a tendency to degenerative changes in heart and arteries, iodide of calcium is of at least equal importance. Both of these salts can be administered in the form of elixirs, and they may be combined in cases which seem to require the administration of both halogens.

Nux Vomica and Strychnine.

Nux vomica and strychnine have for long been employed in cardiac failure. There can be no doubt that, from a clinical point of view, strychnine is of great importance when there is a liability to failure of the heart muscle, and it is very largely employed, with the most excellent results, by physicians in general. The arterial pressure indicates comparatively little change under the influence of this drug, but the rate of the pulse is diminished, and from the investigations of Cameron it is clear that strychnine increases cardiac tonicity except when so much diminution of rate has been produced as to lengthen the period of diastasis. Strychnine, administered hypodermically, produces much more definite effects than can be obtained by internal use. But when there is any particular reason for desiring the influence of a colloid, rather than a crystalloid, in respect of the alimentary tract, one of the preparations of nux vomica may be administered. In many cases of cardiac failure associated with nervous manifestations, strychnine with hydrobromic acid is a valuable combination; my own experience, nevertheless, has taught me that in many instances of cardiac weakness along with profound nervous disturbances strychnine is not to be recommended. This is especially the case in the tachycardia which attends the cardiac debility following diseases such as influenza, in which a combination of the bromides with digitalis or strophanthus is much more useful. It is rather difficult to explain this, as the employment of strychnine, as a rule, diminishes the frequency of the heart. The only reason which seems to account for the increase of the symptoms in such cases is to be sought in the stimulation of an already irritable nervous system. An interesting fact about strychnine is that when the influence of the vagus has been removed the administration of strychnine decreases tonicity through an increase in the systolic output. This result is not accompanied by any appreciable change in the arterial pressure, but is attended by reduction of frequency. It is extremely probable, therefore, that strychnine, like digitalis, increases tonicity through its action upon certain fibres of the vagus nerve. Another most interesting fact is that an increase in tonicity may occur without any change in maximal, minimal, or mean pressure, as well as in pulse-rate; this is perfectly in harmony with clinical observations, showing that strychnine has a good effect in cases of dilated heart, even when no alterations can be observed with the sphygmomanometer.

Digitalis and Strophanthus.

The action of digitalis as regards arterial pressure and systolic output has been so often described, and the main facts are so clearly recognised, that little more requires to be made of this aspect of its action. The constriction of the peripheral vessels, the rise of arterial pressure, and the diminution of the pulse-rate are constant features with moderate doses; the systolic output may be increased or diminished, but is more usually little changed—such are facts universally acknowledged. These actions are clearly stated in the best of our standard works on pharmacology, such as that of Cushny.[74] A most interesting discussion on digitalis took place in London in 1910, and the views of Mackenzie[75] and Wenckebach[76] attracted great attention. Since then Mackenzie[77] has published a long series of observations on the actions and uses of the drug.

As regards the action of the drug on tonicity the experiments of Cameron show that digitalis brings about marked

increase of tonicity. The therapeutic employment of digitalis in cardiac failure undoubtedly depends very greatly on this increase of tonicity, although its effect on contractility is also of much importance. By increasing tonicity digitalis reduces the size of the cardiac cavities, which do not therefore expand so much during diastole; the residual blood is thus diminished, and contractility is, as it were, allowed to act under more favourable conditions. Stewart[78] has shown, for the dilatation produced by aortic incompetence, that no appreciable amount of blood regurgitates into the ventricle until tonicity has been diminished. This in itself is an admirable answer to those who fear to use digitalis in aortic incompetence, and a complete justification of the views of Balfour.[79]

Strophanthus is, in its effects on tonicity, strictly analogous to digitalis; but, as is now well known, it has much less influence over the peripheral vessels and brings about a smaller degree of vascular contraction. In cases, therefore, where the arterial pressure is high, while cardiac tonicity is low, strophanthus is distinctly indicated. It has a further advantage in that its action is brought about with great rapidity.

Adrenalin and Nitrites.

Although adrenalin is not a substance which we are likely to employ for any direct action upon the heart, it is yet so commonly in use for a variety of other conditions that a glance may be given at its effects on tonicity. The observations of Cameron seem to indicate that adrenalin actually lowers tonicity before it affects arterial pressure; but that, after the drug has brought about a general vaso-constriction, it leads to a gain in tonicity through increased intraventricular pressure.

Nitro-glycerin has been for a good many years very largely employed, in order to relieve spasmodic contraction of the arteries and arterioles, and it is encouraging to know that this decrease in arterial pressure is attended by elevation of tonicity. In very many instances of cardiac weakness, with or without dilatation, the influence of nitro-glycerin and the other remedies belonging to this series is of the greatest advantage. A very interesting point is that the employment of digitalis, in combination with nitro-glycerin, receives from these researches of Cameron strong scientific support, the combination of these drugs having a decided tendency to increased tonicity, while the nitro-glycerin greatly diminishes the vascular constriction. It has long been known to me that a high diastolic pressure is more serious than an elevated systolic pressure in elderly persons, with a tendency to cardiac failure, and the following remarks made by Cameron[80] with reference to a case of heart failure are of interest in this connexion:—

> Summarised, the action of digitalis alone is to increase both systolic and diastolic pressures, thus not altering the pulse pressure greatly. Nitro-glycerin alone produces a fall in both systolic and diastolic pressures with but little change in the pulse pressure. But a combination of the two secures the increase of the systolic pressure due to digitalis, and the decrease of the diastolic, and especially the mean, pressure attributed to the nitro-glycerin, thus resulting in a greater increase of pulse pressure than would be obtained by either drug alone. The patient's condition varied with the pulse pressure, being better when the pulse pressure was large, worse when it was small.

Summary of Treatment.

In the management of milder cases of weakness, with little or no dilatation, regulation of rest and diet, as well as attention to digestion and elimination, will suffice to bring about recovery. Even in such instances the employment of some cardiac tonic is helpful as a means of accelerating improvement. Long experience has convinced me that, for this purpose, small doses of digitalis are beyond comparison most useful. If not causing gastric or enteric irritation the tincture is best, and the dose should not exceed 5 minims twice a day. The remedy may be combined with nux vomica, if it seems advisable to do so. In graver cases absolute rest and general massage, with careful diet and free elimination, must be employed, as well as larger doses of digitalis and strophanthus. If the arterial pressure is high, it will suggest the employment of the nitrites; if the liver is enlarged the use of mercury, along with digitalis, will be indicated; if the renal secretion is scanty the addition of citrate of caffeine and of citrate of potassium will be helpful. It is not necessary to say more on this subject, as the most serious examples demand the general treatment of cardiac failure.

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CHURCH ARMY CHILDREN'S SANATORIUM.—The Duchess of Albany opened the Church Army's sanatorium for 18 consumptive children at Crookham, Hants, on the afternoon of St. George's Day. The Duchess was received by the Bishop of Winchester (who dedicated the Home), Prebendary Carlile, Miss Walker (honorary secretary of the society's fresh air and dispensary department), and other members of the headquarters staff. Mr. A. C. Salter, M.P., and Dr. Barty King were amongst the speakers at the meeting.

CELLULAR ACTIVITY IN HEALTH AND DISEASE:

BIOCHEMICAL STUDIES BASED UPON NEW METHODS OF INTRA-VITAM STAINING.

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THE new histological methods introduced by Altmann, Ehrlich, Arnold, and others, have enabled us to establish closer relations between the morphological appearances of the cell and its specific physiological activity. It is now undisputed that where a granular condition exists in the protoplasm of a cell we may assume that the granules are associated with some form of secretion, either internal or external, according to the anatomical relations of the cell to its surroundings. No wonder, therefore, that histologists should endeavour to search for new methods to enable us to demonstrate internal secretion, under conditions where the ordinary methods of physiological research fail.

What modern histology owes to Ehrlich, who first demonstrated the neuro-, lipo-, and polytropic properties of various aniline stains, needs no comment, since these investigations on the chemical affinity of certain aniline colours to animal tissues have resulted in chemotherapy and the discovery of salvarsan. The great gulf which separates anatomy, the study of the dead, and physiology, the study of the living cell, has now been bridged by the introduction of intra-vitam staining, which though in its infancy has already yielded results hitherto unapproached by other means. Through the liberality of Professor Ehrlich I became acquainted with various aniline colours which after injection produce a more or less rapid and universal colouring of the skin and various internal organs in mice, rats, guinea-pigs, and rabbits.

The best results in intra-vitam staining of rats are achieved by subcutaneous injections of a 1 per cent. solution of isamine blue, 1 grm. per 20 grm. of the animal's weight. On the beginning of the third day a faint blue appears on the animal's ears, and then the blue colour gradually spreads over the whole surface of its body. Repeated injections at intervals of 8 to 10 days increase the intensity of the colouring without impairing the animal's health. But the stain is not restricted to the surface; we find it microscopically throughout the whole of the body, always embodied in granules of specific cells. Thus in the skin the stain is found in the granules of the fixed connective tissue cells of the cutis, but chiefly in free round cells belonging to the lower layer of the subcutis. Here the cells aggregate in great numbers, and especially in spots where an irritation or lesion of the skin is produced by artificial means or by pathological processes. These cells, which belong to the type of the "histogenic migratory cell," are by no means confined to the skin; they appear in every internal organ (with the one exception of the nervous system) and always in connexion with interstitial fibrous tissue. We find them in muscles and tendons, in glands, but especially in serous membranes—e.g., in the peritoneum—whose *taches laiteuses* seem to form a matrix for their production.

By means of the intra-vitam isamine blue stain we can differentiate the "Kupffer" star cell in the liver, the reticulum cell of the lymph glands, the spleen and bone marrow, the interstitial cell of the testicle, the follicle cell in the maturing Graafian follicle, cortex cells of the suprarenal, the epithelial cells of the choroid plexus, and the epithelial lining of the convoluted tubes of the kidney.

Most striking is the appearance of the placenta and its behaviour in relation to the rest of body. When pregnancy occurs in the vitally stained animal the blue colour disappears from its skin and is concentrated in the uterus, the latter forming a centre of attraction for the vital stain, and actually dispossessing the remaining tissues of their blue. In the uterus we find the blue chiefly in the free cells of the decidua serotina, but also in the cells of the reflexa during the period of its existence. In an early stage of pregnancy (sixth to eighth day) these granular cells in the decidua of peritoneal descent cast off vitally stained granules which are eagerly snatched up by the fœtal components of the developing placenta. Once the placenta has attained its maturity, we discover the vital stain in the "giant cells" forming the boundary line between the maternal and fœtal part of the placenta. We also find it in those fœtal cells which constitute the only barrier between the maternal blood spaces and the endothelial-lined capillaries of the fœtus. Finally, the vital stain effects a most striking specific differentiation in the granular cells of the vitelline membrane. Notwithstanding the fact that the yolk membrane is deeply stained throughout its whole extent and that the amniotic fluid shows a faint bluish colour, the embryo remains perfectly colourless, the placenta and its appendages thus forming a protective barrier against the passage of the stain from the maternal into the fœtal organs. Although the stain circulates in the blood no blood cell accepts it, nor has it any effect on the cells of the vascular coats.

After many futile experiments I finally found ways and means of fixing the vital stains, so that we can now prepare permanent histological specimens which recall the conditions of the living cells in all detail and accuracy. As a rule, we inject the anæsthetised and deeply blue-stained animal from the beating heart with formalin solution, open the body cavities by a median incision, and immerse the mouse or rat in formalin. In 48 hours the vital stain has become sufficiently fixed in the cell to allow of the preparation of sections. I have specimens which have not faded in the least within the last three years. As the vital strain is strictly confined to the protoplasm counter stains for the nucleus, &c., are necessary.

Ovum and Placenta.

My studies have been confined so far to the rat and mouse, since these animals still form unrivalled material for cancer research. I will first take up the remarkable conditions revealed in the ovary and placenta. As the primordial egg cell grows into the Graafian follicle the inner layer of follicle cells display granules in their protoplasm which show a marked affinity for the blue of the vital stain, whereas the ovum itself shows no trace of blue. The question arose as to whether these follicular cells are the bearers of any special nutritive material which the ovum receives before it bursts the follicular membrane and starts on its downward journey.

I first applied the ordinary fat stains, such as osmic acid, Sudan and scarlet red, only to corroborate a fact frequently mentioned by various authors, that the inner follicular layer of cells gradually succumbs to "fatty degeneration." Here, again, we discovered that although the cells immediately contiguous to the ovum were highly charged with fat no fat or lipoid substance could be found in the ovum itself. It seemed, therefore, the more remarkable that on application of glycogen tests the result in the maturing ovum was positive, whereas in all the remaining cells of the follicle and the ovary the test failed. On full development the protoplasm of the ovum is rich in glycogen. In sections stained by Best's carmine method the ova show a brilliant red in their protoplasm and a rich red in their nucleolus. In order to avoid decomposition of the relatively small amount of glycogen found in the minute ova of mouse and rat, it is essential to precipitate the glycogen rapidly by means of alcohol injection from the beating heart of the anæsthetised animal according to the method mentioned before. Without these precautions glycogen in the ova becomes invisible. Hence the fact that so many have failed to trace it in the ova by the ordinary methods.

Oddly enough, I have found in the ovaries of rats and mice, and especially in such as had been tumour bearers, ova in various stages of division. In one specimen within the zona pellucida of the ovum no less than five cells with well defined nucleus and nucleolus were discovered. The ovum lay either in the centre of the follicle or in an eccentric position apparently dislocated thither by the abnormally widened follicular cavity. The membrana granulosa had disappeared almost completely. Such ova had all the appearances of a morula. The cells constituting the morula were richly filled with glycogen granules.

I am well aware that after what Bonnet has contributed to our knowledge on the division of ova within the ovaries of mammals, it would be a mistake to talk of parthenogenesis in our cases, since such ova after division differentiate no further, but rapidly degenerate. Yet the fact remains that division occurred and that the segments of the ovum contained glycogen. Was it possible that such abnormal

division of ova, within the ovary, and without the impetus of a male cell, could be induced by the malignant growth or its biochemical action? Such an inducement does not seem at all improbable, since Loeb has shown that under normal conditions the egg-cell may be caused to divide by agents which precipitate lecithin in its protoplasm. Similar observations have been described by Wassermann and his pupils, who showed that by adding serum of syphilitic patients to the eggs of cœlenterates these begin to divide, the cause of the division being the power of the syphilitic serum to precipitate lecithin.

I hope on a future occasion to be able to throw more light on the question of disturbance in the normal development of ova by the influence of bodies derived from malignant growths. In any case we have proved that both in the ripe egg and in its first segmentations glycogen is a stable ingredient of its protoplasm. The importance of this fact will appear from what I now have to report on glycogen in the placenta and embryo. As in the case of the ovum, my studies on the placenta have been much influenced by what the vital stain has revealed in the placenta—namely, that the placenta forms a powerful centre of attraction for the blue colour, extracting it from the circulating blood as well as from stained tissues in order to deposit it finally in specific cell elements of fœtal origin. Can similar facts be established for the passage of glycogen, fat, iron, and hæmoglobin from the maternal system into the embryo, through the medium of the placenta?

Embryonic development produces in rodents (as several authors have demonstrated in the human being) a functional hyperactivity in the production of glycogen, chiefly in the maternal liver. In the pregnant animal a high percentage of glycogen is found in the blood. On submitting the uterine vessels to the Best or iodine test it can easily be shown that glycogen passes in great quantities into the uterus and placenta through the uterine arteries. When, as in early stages of embryonic development, hæmorrhages form an important element of nutrition for the embryo, glycogen appears in the extravasated blood patches which surround the growing embryo, and form a line of cleavage between maternal and fœtal placenta. In mice and rats Sobotta, Duval, and others have shown that the parietal layer of the vitelline membrane very soon disappears, whereupon the visceral layer is brought into immediate contact with the extravasated blood that originally surrounded the yolk sac. The granular cells of this yolk membrane are a strong absorbent of the vital stain. Glycogen is likewise hoarded up in their granules, and especially in the cells lining the villi which form such a characteristic feature in the yolk-sac membrane near its connexion with the placenta. The vitelline cells receive their glycogen from the blood pools in which the villi are steeped, and then pass it into the fœtal vessels underlying the villi. But a more important absorption of glycogen takes place in the placenta itself, when the allantois has brought the fœtal blood-vessels into the growing placenta.

It is well to classify the full-grown placenta into three separate zones. The outer zone bordering on the uterine wall is chiefly composed of decidual structures and therefore deserves the name of decidual layer. In the central zone maternal and fœtal elements coalesce, but in varying abundance, according to the stage of embryonic development. Towards the final stage of the embryo the maternal cells are almost wholly substituted by fœtal tissues. The name (which Grober suggested) "Umlagerungs-Zone" best expresses the constant morphological changes of this central layer. Finally, the innermost layer of the placenta is almost completely occupied by fœtal capillaries with their endothelial lining and by the irregular maternal blood spaces, whose walls are solely constituted by big fœtal cells, probably of the same origin as the "giant cells" that separate maternal and fœtal placenta in the central zone.

As soon as the placenta begins to absorb glycogen a peculiar structural change occurs in the coats of the uterine vessels. In the place of flattened endothelial cells we find swollen polygonal cells, which bulge into the vessel's cavity, multiply and segregate themselves from the wall of the vessel. They start on a pilgrimage into the decidual layer of the placenta, where they form whole bands of cells, following the branching of the maternal vessels. These cells are filled with glycogen, for which reason I have named them "glycogen carrier cells." As they pass into the central layer of the placenta they excrete their glycogenic material. This is eagerly taken up by the fœtal cells, which constitute the only barrier between the fœtal capillaries and the maternal blood spaces. Specimens stained by Best's method show such glycogen in the shape of a fine red dust, lining the fœtal capillaries and stretching through the whole length of the placenta's labyrinth right up to its hilus. Here it disappears, and on its transition into the fœtal blood-vessels it becomes invisible.

We can therefore distinguish two different types of glycogenic absorption in the placenta. We have a "direct" type characterised by the absorption of glycogen from the extravasated blood. Here the absorption is carried out by the granular cells of the vitelline membrane, the villi of which float in the uncoagulated blood. The "indirect" type of glycogenic absorption is marked by the formation of special glycogen carrier cells, which originate from elements of the uterine blood-vessels, wander into the substance of the placenta, and give off their glycogen to fœtal cells, that form, as it were, an inner coat to the maternal blood spaces and an outer one to the fœtal capillaries. In both cases maternal glycogen undergoes some modification in the fœtal elements of the placenta before it enters the fœtal circulation.

As to the absorption of fat in the placenta, I may mention at the very outset that it is not produced by the placenta but borne thither by the uterine vessels. Sudan stains of frozen sections reveal fat in these uterine channels as an orange-coloured homogeneous mass, which occupies a lateral position in the vessel cavity, whilst the blood corpuscles remain in the central stream. On entering the middle layer of the placenta the uterine vessels undergo a complete disintegration of their walls. Fat diffuses from its cavity into the fœtal cells, which take the place of the atrophied vascular walls. Now we observe a most characteristic metamorphosis of fat, found throughout the whole of the placenta and fœtus. As soon as fat is absorbed by fœtal cells its intracellular condition is marked by the appearance of fat droplets which take up both the Sudan and osmic acid stain. Whereas Sudan will stain fat both in solution and in emulsion, osmic acid only differentiates the latter. Hence, in the case of fat we can follow by means of the Sudan stain its migration into the fœtal capillaries. Especially in the inner layer of the placenta we find fat droplets like strings of beads, lining the fœtal capillaries and encased in the same fœtal cells, which are all-important in the absorption of the vital stain as well as of glycogen. We can determine the passage of fat from these cells into the fœtal capillaries by the fact that, as in the uterine vessels, the intravascular dissolved fat stains with Sudan, and a homogeneous substance shows in the lateral stream of the vessel. As the fœtal capillaries collect to form the branches of the umbilical vein a change in the condition of the vascular fat becomes apparent. It is no longer homogeneous, but is broken up into minute droplets (emulsion).

Another proof that fat is not produced in the placenta, but carried thither by the blood stream, is the fact that wherever hæmorrhages occur fat is a component of the extravasated blood. It is easily demonstrated by Sudan, osmic acid, and other fat stains. Now these hæmorrhages in the placenta are "physiological" and not "pathological." They always occur in the same regions of the placenta, either on the boundary line between maternal and fœtal placenta or in the vitelline cavity. In the yolk sac fat is absorbed from the extravasated blood by the same granular cells of the yolk membrane which take such an active part in the absorption of glycogen and the vital stain. The hæmorrhages which occur on the border between maternal and fœtal placenta serve as a fat reservoir for the "giant cells." These "giant cells" are undoubtedly also of fœtal origin, although Sobotta and Burkhard have recently tried to prove that they are descendants of decidual cells. The "giant cells" likewise eagerly retain the vital stain in their granular protoplasm. Hence, we have shown that, exactly as with glycogen, maternal fat, before being accepted by the fœtal capillaries, is temporarily retained in fœtal cells of the placenta, in whose protoplasm it certainly suffers some modification, which deprives it of properties alien to the fœtus and facilitates its assimilation by the fœtus.

As regards iron, my investigations have brought to light only one important fact. I have been able to prove that minute iron granules appear in nucleated red blood corpuscles wherever hæmoglobin begins to form. In the

placenta this condition is only found in fœtal capillaries of the inner and central layer adjacent to extravasated blood or maternal blood spaces. My attention was thus directed to the important question: Whence does the embryo draw its supply of hæmoglobin?

Fœtal hæmoglobin is a derivative of the maternal, and is manufactured in the placenta. I base my statement on most interesting observations, gained by a special method—viz., an intra-vitam injection of 1 per cent. osmic acid solution through the beating heart of the anæsthetised and pregnant animal. After injection the placenta remains in osmic acid or Flemming's solution for a short time, and is then treated in the ordinary manner for microscopical purposes. The intra-vitam osmic acid fixation differentiates hæmoglobin more effectively than any other method known to me. On examining specimens of the placenta and embryo subjected to this method I noticed the remarkable fact that whereas the red blood corpuscles in the embryo and the umbilical artery were poor in hæmoglobin, those in the venous capillaries and smaller veins of the placenta show a deep hæmoglobin stain. The concourse of hæmoglobin-bearing erythrocytes from the placenta is best demonstrated at the entrance of fœtal venous capillaries into the umbilical veins. The hæmoglobin cell is most distinct from its pale relation. Whilst the hæmoglobin-bearing cell circulates in the embryo, it loses its hæmoglobin and returns to the placenta, through the umbilical artery, in a pale condition, in order to receive a fresh supply of hæmoglobin. As yet I have not been able to ascertain when the nucleated red blood corpuscle loses its nucleus. It does not seem improbable that this loss happens as soon as the embryo is able to produce hæmoglobin in its own organs and needs the assistance of the placenta no longer.

The foregoing facts prove conclusively that the fertilised egg exercises a formative, nutritive, and functional effect on the whole maternal organism, consisting not only in the new formation of cells, such as the glycogen-carrier cell, the decidual cell, and others, but also in the hyperactivity of organs (liver, hypophysis, and others) producing nutrient material such as glycogen, fat, &c., for the growing embryo. Here already we detect an important resemblance between the influence of the fertilised egg and the malignant growth cell.

These facts show that the placenta is not, as Claude Bernard maintained, an organ which produces the material needed for the nutrition of the embryo. The nutrient material proceeds from the maternal organism, and is attracted by the placenta in great quantities. Here it is temporarily incorporated in fœtal cells before it enters the fœtal circulation.

I next proceeded to determine the order and sequence in which the substances are distributed in the various organs of the growing animal. No better example than the pregnant uterus of mouse and rat could be selected for this purpose, since, through its smallness, we can control in one single microscopical section the conditions obtaining in both placenta and embryo. Thus I have been able to determine that, according to the stage of their development, the various organs of the embryo evince varied and distinct powers of selection for specific nutrients. No sooner do we see the first traces of the fœtal heart and respiratory system than glycogen is largely attracted by, and deposited in, the muscular cell of the heart and in the epithelial cells of primitive respiratory alveoli. Almost the whole system of striped muscle is provided with glycogen before the liver begins to take it, although the fœtal vessels and vena cava are charged with glycogen. When we bear in mind that the primitive function of the liver is a hæmopoietic one, and, further, that all hæmopoietic tissue, such as spleen, bone, marrow, and lymphatic glands, never include glycogen in their cell contents, we can well understand that glycogen makes its appearance in the liver only after the specific liver cell is differentiated in a later period of embryonic growth.

In comparing the successive stages of embryonic growth we become familiar with the fact that glycogen remains a staple ingredient in the protoplasm of certain tissues, such as ossifying cartilage, whereas it has only a transitory existence in others, such as the lung and spinal cord. It is solely on the strength of studies on embryonic tissue that we understand why under pathological conditions—tuberculosis, for instance—the epithelial cell of the bronchus re-assumes its fœtal power of forming glycogen. It is of extraordinary interest to compare when and whither fat and glycogen migrate respectively into the various units of the fœtal system. With but few exceptions their distribution is a similar one.

If I have succeeded in convincing my reader to what an extent biochemical study on the ovum and placenta has been stimulated by the new method of intra-vitam staining, I feel confident of retaining his attention during my description of diseased conditions viewed from a similar standpoint. Among the great number of pathological conditions which have engaged my attention since I have learnt to use the vital stain I intentionally select those affecting the abdominal organs, as they in particular afford striking evidence of the usefulness of the method.

Peritoneum.

In the vitally stained animal the peritoneum is of a deep blue colour, varying in intensity in certain areas of the omentum and mesentery, also in the peritoneal coats of the stomach and bowel. Thus, for instance, the cardiac portion of the mouse's stomach only stains light blue, whereas the glandular pyloric half has a dark shade. On closer examination this difference is traceable to the presence of larger or smaller numbers of vitally stained free peritoneal cells in the respective parts. The difference in colour corresponds exactly to a difference in physiological function, inasmuch as the cardiac section of the mouse's stomach serves a more mechanical, the pyloric a purely digestive, purpose.

Again, in the omentum, mesentery, and certain ligaments, such as the ligamentum gastro-lienale, we find the membranes studded with dark blue spots, which microscopical analysis reveals to be crowded aggregations of blue-stained peritoneal cells. Nothing could be of greater interest than to determine how these spots vary in size and number according to the age of the animal, the phase of digestion, and according to certain pathological conditions produced by poisons (phosphorus, cumarin, &c.), or by pathogenic germs, such as tubercle bacilli. These blue spots in the omentum correspond to the *taches laiteuses* first described by Ranvier. The cells are similar in appearance to endothelial cells, but their nucleus is smaller. They, moreover, show biochemical qualities wholly distinct from those of the endothelial cell, since in contradistinction to it their protoplasm is granular and shows a strong attraction for the vital blue.

These granular cells are widely distributed through the whole peritoneum, but seem chiefly to follow the perilymphatic spaces of the large vessels which divide the omentum into vascular and non-vascular fields. Groups of these cells, the *taches laiteuses*, are found both in the vascular and non-vascular parts of the omentum, hence their subdivision into primary and secondary *taches laiteuses*. In an early stage of development they are invariably connected with the rich plexus of fœtal capillaries. In later stages of growth the vessels atrophy to a large extent; thus the secondary *taches laiteuses* appear in non-vascularised tissue.

The variety in their size is not only due to the greater or smaller number of cells which constitute them, but is largely due to certain morphological conditions in the size of the individual cell and its granular protoplasm; as in the germ centre of the lymphatic gland we may discriminate between young and full-grown cells. The latter show the characteristic vital blue stain in their granules, which colour distinguishes them from every other cell either temporarily or permanently situated in the peritoneum. Besides their affinity to the vital stain these cells show other highly characteristic qualities. They are wandering cells and migrate not only into the most remote corners of the peritoneal cavity, but also into organs, as, for instance, the liver and the spleen, the pregnant uterus, the mesenteric glands, and even into the lung.

As my investigations on the healing of wounds have shown, these cells play an important part in the formation of scar tissue. They become transformed into fixed fibrous cells, gradually losing all visible traces of granules and the power of attracting the vital stain. But in the first place I must mention that these cells constitute the bulk of so-called free serous cells found in the peritoneal cavity, where they exercise phagocytosis in a marked manner. On injecting finely powdered substances such as carmine, we find the carmine granules greedily seized by these cells and carried into the omentum. In vitally stained animals the blue granules of the serous cells show no diminution in their

power of phagocytosis. I may add that the same applies to the granules of Kupffer cells in the liver. These are the main recipients of Chinese ink injected into the peritoneal cavity, and so form an impassable barrier for small doses of that poison.

As the vital stain does not inhibit the phagocytic activity of the serous cell, the intra-vitam method enables us to study most accurately the distribution of bodies injected into the peritoneal cavity. Thus I found that part of the carmine dust injected remains in the substance of the omentum, where it is incorporated in serous cells which, when fully charged with carmine, ultimately succumb and form the pseudo-tubercles, first mentioned by Hippolyte Martin. But a large quantity of the injected carmine powder is carried away from the peritoneal cavity into the liver, spleen, and mesenteric glands, through the agency of the serous cells, which, for brevity's sake, I will now call macrophages. In these organs the macrophages follow the perivascular lymphatics, become stationary, and form similar tubercles to those in the omentum. But for the application of the vital stain these macrophages in the liver and spleen, and, above all, their peritoneal origin, could never have been demonstrated. I may add that the size, position, and form of the macrophage readily distinguish it from Kupffer's star cell, the granules of which likewise take up the vital stain.

My work in relation to inflammatory conditions of the peritoneum may be briefly summarised by mentioning that in acute inflammation the macrophagic cell of the peritoneum is merely called into action after the storm of leucocytic invasion has abated, and regeneration is succeeding the ravage of inflammation. On the other hand, chronic inflammation of the peritoneum is characterised by the extraordinary activity of the macrophage.

Avian and Bovine Tuberculosis in the Mouse.

Here I must emphasise the fundamental difference which I established with regard to the distribution of avian and bovine bacilli of tuberculosis when grafted into the peritoneal cavity of the mouse. Hitherto in all cases of *spontaneous* tuberculosis in the mouse the "avian" bacillus has been found. Koch had already drawn attention to the chronic course of tuberculosis in the mouse. And yet, when the mouse is subjected to an injection with bovine or human tuberculosis, either through the blood-vessels or the peritoneal cavity, the disease runs a comparatively rapid course, in many cases assuming a form of bacillary septicæmia or miliary tuberculosis of the lung.

In accordance with these facts I was able to show that after peritoneal injection of bovine material, besides rapidly caseating tuberculosis of the peritoneum, the chief seat of trouble was the lung, whither the bacilli had been carried by the blood stream after penetrating the portal vein and causing extensive tubercular thrombi throughout its larger branches. The liver and spleen contained merely microscopic lesions when compared with the large areas of tubercular necrosis in the lung. The macrophages of the peritoneum took no active part in the acute form of experimental tuberculosis.

An entirely different result followed the intraperitoneal injection of the avian bacillus. On macroscopical examination of the vitally stained animal several weeks after inoculation of the virus the peritoneum and intraperitoneal organs hardly showed any trace of disease. All the more remarkable were the lesions revealed by the microscope. The omentum was full of blue patches, which to the naked eye wore the appearance of *taches laiteuses*. By means of the specific stain for bacilli I was able to prove that these blue patches consisted entirely of macrophages, whose blue protoplasm was choked with myriads of bacilli. No trace of inflammation could be found in their immediate or more distant surroundings Such aggregations of macrophages laden with bacilli were also discovered in the liver, spleen, mesenteric glands, and, in a smaller number, in the lung. In all these organs the tubercles had the vital stain and were thus easily distinguished by a low magnifying power. They lay in lymphatic spaces, in the liver surrounding the portal vessels, in the spleen arranged round the Malpighian bodies. The blood-vessels were, with few exceptions in the liver, intact. No caseation occurred, nor could small cell infiltration or giant cells be anywhere found in connexion with these vitally stained tubercles of peritoneal origin.

A key to the whole process was afforded by the examination of animals at short intervals after the injection of the avian bacilli. The latter are quickly conveyed to the liver, where they are destroyed in great numbers by the Kupffer cells. Such as remain in the peritoneal cavity are ingested by the vitally stained macrophage. They multiply in those cells, which wander into the omentum, liver, spleen, and mesenteric glands, and eventually into the lung. As the bacilli increase, a most characteristic morphological change occurs in the cell. The granules of the protoplasm gradually disintegrate; the vital stain, which had originally been confined to the granule, now effects a diffuse stain of the whole cell. Eventually it may disappear entirely. As this metamorphosis of the cell protoplasm proceeds its biochemical reaction alters, inasmuch as in the place of a specific attraction for the vital stain the protoplasm now shows an increased affinity for the fat stains. Fat first appears in the shape of tiny droplets. In the final stage these droplets increase in size and eventually usurp the place of the cell body. And yet the cell continues to live, for even in this stage of excessive fat infiltration the nucleus takes up the nuclear stain and shows no signs of degeneration. Naturally in the end the cell succumbs. After death the fat also disappears from its necrosed body, whose shape still remains visible as a ghost in the tubercles undergoing necrosis.

We have thus established a fundamental difference in the distribution of bovine and avian tuberculosis when injected into the peritoneal cavity of the mouse. In the bovine variety metastasis occurs along the blood stream through the thrombosed portal veins; in the avian variety the dissemination is effected by the lymphatics. The "avian" tubercles, which appear in the omentum, liver, spleen, mesenteric glands, and lung, consist of peritoneal macrophages, which are vitally stained. Through the intracellular multiplication of the bacilli the granular protoplasm of the macrophage gradually disappears. Consecutively the vital stain becomes indistinct and diffuse. Fat takes the place of the protoplasmic granule.

The localisation of the avian tubercles in the liver is highly characteristic. They are chiefly arranged in the peri-lymphatic spaces which surround the portal vessels. As a rule they contain, besides the vitally stained macrophages, a ring of plasma cells. Both of these cells are strangers to the adult liver. It is interesting to note that both these strangers migrate into the liver along the same channels used by fœtal blood-cells which form in the embryonic liver and join the lymphatic circulation. My observations on the peritoneal injection of lifeless particles of carmine, as well as of avian tubercle bacilli, prove that an open lymphatic connexion exists between the peritoneal cavity and the lymph spaces in the liver. The same holds good for the spleen.

No less interesting is the general reaction in the liver and the spleen after peritoneal injection of *bovine* material. Along the perivascular lymphatics of the portal vessels the liver exhibits a dense infiltration of lymphocytes, plasma cells, and even of megakaryocytes, an arrangement so typical of that period in the fœtal liver which is associated with the genesis of blood cells. Exaggerated hæmopoiesis may also be inferred from the enormous increase of plasma cells in the spleen, which occupy the pulp as well as the Malpighian bodies. Similar phenomena make their appearance in the liver and spleen when diffused peritoneal cancer is experimentally produced or when complete cancer immunity has been established.

As to the local reaction in peritoneal cancer I wish to add that exactly as in avian tuberculosis the peritoneal nodules are invaded by vitally stained macrophages. In cases of peritoneal cancer in which I injected carmine powder into the peritoneal cavity I found the carmine-bearing macrophages exclusively in and around the cancer nodules, none in the liver or spleen, so strong was the avidity of the cancerous growth for the macrophages.

Lesions of the Liver and Skin.

I conclude my remarks on intraperitoneal disturbances with a short reference to experimental necrosis, produced in the liver by various poisons, such as phosphorus, cumarin, cocaine, and above all things by a substance first prepared by Ehrlich called icterogen. The latter is an arsenic compound of Ehrlich's "606" series. On injection of a centigramme of a 1 in 5000 solution the mouse develops severe jaundice, followed by miliary bland necrosis of the liver cells Similar to cumarin, icterogen induces thrombosis in

the smaller interlobular portal vessels, which explains the consecutive necrosis of liver cells. I have included these experiments in this review to show that, wherever non-inflammatory necrosis in the liver occurs, vitally stained macrophages leave the peritoneal cavity, migrate along the liver lymphatics towards the seat of trouble, and eventually assist in the repair of the damage. No less important is the part played by these macrophages where the liver is wounded or becomes the seat of parasites.

I have given ample proof of the extreme chemotactic sensibility peculiar to the peritoneal macrophage. This cell is in no wise to be distinguished from the histogenic migratory cell of interstitial tissue, but corresponds in every detail to that cell which on vital staining gives rise to the blue colour in the skin. Careful injections of isamine blue in newly born animals have revealed the interesting fact that an enormous depôt of such cells exists under their skin. They migrate from the subcutis into the upper and deeper layer of muscles, and eventually join hands, so to say, with the macrophage of the serous cavities. All these cells are granular in structure. Have we reasons for doubting Renaut when he argues that the interstitial tissue is one large mass of cells unrivalled in the body for their powers of internal secretion?

All lesions of the skin, but most especially such as show a minimum of inflammatory sequelæ, attract the blue-stained macrophage in great quantities. Its activity is effectively displayed in the healing of aseptic skin incisions. Stage by stage biochemical reactions enable us to follow the physiological effects produced by the various cells which combine in perfecting the healing process. No sooner does the leucocyte emigrate from the dilated blood-vessel into the injured area than glycogen appears in its protoplasm. The macrophage is the next on the scene. It absorbs the exuded glycogen by means of its vitally stained granules. Then the transformation of the macrophage sets in, the granules and, in their train, the vital stain disappear, and fat in tiny droplets takes their place. Finally, these also disappear as the rounded cell stretches into the spindle cell of the young scar tissue.

Malignant Growths.

But in no case, to my knowledge, does the aggregation of blue-stained macrophages assume such extraordinary dimensions as in the instance of malignant growths placed under the skin. They swarm around the growing tumour and penetrate it along the endless blood channels which furrow its lobules. In the interior of the growth most of these cells succumb. I am still engaged in an inquiry into the relations existing between the growing tumours and these cells. Not wishing to forsake the sure ground of established facts I merely state that the appearance of these blue-stained cells on the field of tumour grafts may be regarded as a specific local reaction, induced by the tumour cell. When exempt from inflammatory agents the tumour attracts no other migratory cell. Are they the bearers of nutritive material? Hitherto I have failed to discover glycogen, fat, or iron in the surroundings or interior of an experimental growth in appreciable quantity. One cannot, therefore, assume that the growths attract nutrients as the fertilised egg attracts them through the medium of the placenta. And yet the growing tumour has a distinct general effect on internal organs.

The liver and spleen, as I said, evince signs of increased hæmopoiesis under the influence of growths. In cases of rat sarcoma exceptionally large quantities of glycogen are hoarded up in the liver cells. More striking is the appearance of diffuse glycogen infiltration in the fatty tissue which surrounds the kidney and suprarenal. Similar but less extensive and regular are these appearances in tumour-bearing mice.

Here we have a number of points which bear a striking analogy to those I have dealt with at such length in connexion with the placenta and the nutrition of the fœtus. A great step forward in our knowledge of malignant growths would be achieved were we able to determine which bodies are needed for the growth and which for the nutrition only of the tumour cell. As yet we only know that bodies similar to those needed for the growth of the embryo serve the same purpose for the malignant cell. In pregnant tumour-bearing animals a race for these bodies actually takes place between the embryo and the tumour cell. In most cases the embryo is victorious—it thrives, and the tumour either atrophies or remains stationary in size, until its competition with the embryo is concluded by the birth of the latter. We also know that under certain conditions, when the number of embryos is a smaller one, the foodstuffs are produced in excess, so that besides the embryo the tumour gets its fill and increases rapidly in size.

I have shown of what great importance fat, glycogen, hæmoglobin, and iron are in the building up of the fœtal organism. how their production is increased in the maternal tissues, how, finally, after having suffered a temporary delay and after having been transformed in that great fœtal food depôt, the placenta, they reach the embryo. Hence, it seemed to me of the greatest biological and practical value to inquire as to whether the body of the adult tumour-bearing animal was in possession of any organ analogous in function to the placenta of the pregnant animal, and to determine how far it is in our power to inhibit or delay the transmission of substances needful for the growth of the tumour cell.

It is now many years ago that Claude Bernard, on the strength of his glycogen studies, first drew attention to the functional analogy existing between the placenta and liver. He actually claimed to have discovered that the placenta took on the functions of the fœtal liver until the latter had, so to say, come of age. What a number of new facts have been ascertained in recent years which seem to give fresh colour to Claude Bernard's hypothesis! We know that under certain conditions the liver, like the placenta, may become a great storehouse for glycogen and fat, we have learnt to appreciate the liver's powers of forming blood, and we have above all things ascertained to what extent the liver acts as a poison filter to the body, retaining substances of a deleterious nature or rendering them innocuous.

From this point of view I have started an experimental inquiry into the possibility of arresting malignant growth by producing lesions in the liver of such a nature that its functions, though temporarily impaired, are not entirely and permanently suspended. Such an inquiry seemed the more justified since all local and general methods of treatment, even sero-therapy, have failed in the cure of experimental tumours.

My inquiry has been much facilitated by the knowledge of Ehrlich's "icterogen," the arsenic preparation to which I have already alluded, in connexion with my studies on degeneration in the liver produced by specific poisons. My mode of procedure has been the following. The injection of 1 centigramme of a 1 in 5000 solution of icterogen was followed up in the mouse by an inoculation of the tumour graft. It is essential to time the latter, so that the first stage of growth in the tumour graft synchronises with the maximum effect of the poison—that is to say, with the appearance of jaundice. After the ill-effects of the first icterogen injection have subsided a second one of the same or diminished (1 in 7500) strength may be applied.

The effect of the icterogen treatment is not the same in all cases and in all varieties of tumours. As far as I am able to judge at present, it appears to me that the primary stage of growth is not inhibited; although in a number of my experiments the tumour began to grow later in the icterogen mouse than in the normal mouse. But there can be no doubt that the growth is eventually retarded under the influence of icterogen. At first I was inclined to believe that in tumours of naturally slow-growing tendencies, for instance in Ehrlich's chondroma, the inhibitory effect of icterogen was more pronounced than in tumours of greater virulence. But more recent experiences have convinced me that even in carcinoma and sarcoma similar results to those achieved in chondroma may result from a larger dose of icterogen. When in later stages, from two to three weeks after inoculation, we compare the size of growths in normal and icterogen mice, in the normal animal the growth may be the size of a walnut, whereas in the icterogen mouse it is hardly as big as a pea.

Experiments on rat sarcoma have hitherto failed, but as yet I have not succeeded in producing any specific effect on the rat through icterogen injections. In the injected rats jaundice did not appear, nor could I find any trace of necrosis in the liver after the application of the drug. These negative results seem to form an additional proof that, if at all, icterogen acts on tumours through the medium of the liver.

From what I have seen in the growth itself, after the successful application of icterogen, it appears that the tumour cell undergoes more rapid degeneration than usual.

Frequently ulceration is an early symptom; it may result in complete disappearance of the neoplasm. Icterogen makes no difference in the appearance of the macrophage in the tumour's surroundings. The macrophage invariably shows a distinct bile stain, easily preserved in microscopic specimens by rapid fixation and early histological preparation.

I have not lost sight of the fact that icterogen is a powerful toxic agent producing widely extended circulatory trouble and damage in the liver. Under such conditions, it may well be argued, it is not astonishing to find in the animal, as a sequel of general malnutrition, an inhibition or even degeneration of a tumour graft. But it has not been my intention to advocate an icterogen cure of malignant growths. I merely endeavoured to prove that by damage to the liver the tumour also suffers, probably through the want of material needful for its growth. If so, then we have a new field of therapeutical cancer research thrown open to us. It would, indeed, be of greatest interest were we able to establish a scientific basis for the experience gathered by our medical forefathers, that amongst all inorganic agents used in the treatment of malignant growths none has ever equalled arsenic, whose specific effects on the liver have been so frequently and widely proved, whose curative influence on cancer has but recently again been advocated.

A CASE OF LIGNEOUS THYROIDITIS.[1]

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LIGNEOUS thyroiditis, or Riedel's disease, is an uncommon malady, and therefore we consider it worth while to give a short account of a case which has recently come under our observation. The disease was originally described by Riedel[2] in 1896 as "Eisenharte Strumitis," but we have not seen his original paper. Three cases are described by Mr. James Berry[3] in his well-known book as examples of "primary chronic inflammation of the thyroid gland." Recently a full account of the subject has been given by X. Delore and H. Alamartine,[4] in which short histories of 13 published cases are given, in addition to the details of one case observed by the authors.

The patient, a male, aged 23 years, was brought to us by Dr. E. Perkins on July 11th, 1911, with the following history. For about 18 months he had noticed that his neck was gradually becoming somewhat swollen, and during the last two or three months the enlargement had increased more rapidly, his voice and breathing also becoming affected. Latterly the pressure symptoms had become much exaggerated, respiration at times being attended with great difficulty, so that at night he was often unable to lie down, relief being only obtained by sitting up in bed and bending the head forwards. The dyspnœa was paroxysmal and increased on any exertion, respiration being attended by stridor, at times so loud as to be heard in an adjoining room.

On examining the neck a well-marked uniform enlargement of both lobes of the thyroid gland was found to be present. The swelling was unusually firm in consistence, with a smooth surface, and somewhat fixed, so that it moved very slightly on deglutition. Its nature was rather obscure, as it did not present the symptoms of an ordinary goitre, the fixity and density suggesting the possibility of the early stage of malignant disease. As the symptoms were rapidly becoming urgent, and it was evident that relief would soon be required by surgical interference, it was resolved to explore the swelling without delay, and, if possible, remove the isthmus and one lateral lobe; if, however, this was found to be impracticable, then to perform tracheotomy.

The patient accordingly went into a nursing home, and the operation was performed on July 26th, our colleague, Mr. J. Howson Ray, very kindly assisting, and the anæsthetic being administered by Mr. Alexander Wilson. As there was no difference in the size of the two lobes, it was decided, if possible, to remove the right lateral lobe and isthmus, which were exposed by the ordinary "collar" incision, commencing on the right side of the neck and continued beyond the middle line. After dividing the integument, it was found that the overlying muscles and fascia were adherent to the outer surface of the thyroid, the glandular tissue, capsule, and adjacent structures being converted into dense, apparently fibrous tissue, of a whitish colour, and of such hard consistence that it was not easy to cut it with a scalpel. On making an exploratory incision into the exposed lobe it presented the same structure throughout, all trace of glandular tissue having completely disappeared, and a similar condition was found in the isthmus. A wedge-shaped piece of the gland, consisting of the inner portion of the right lobe, together with the isthmus were first excised, very little hæmorrhage attending the process. Then successive layers were removed from the remaining portion of the same lobe until its periphery was approached, when the bleeding became more profuse, and somewhat difficult to arrest, in consequence of the dense tissue in which the vessels lay. As the trachea was extremely narrowed laterally, presenting the appearance described as "scabbard" trachea—in order completely to remove the lateral pressure on both sides—it was thought advisable also to excise the greater part of the left lobe, and this was dealt with in a similar manner.

Though the trachea was now completely exposed and relieved of all lateral pressure, there was still marked obstruction to the respiration. This was found to be due to a definite band of dense tissue, extending from the tip of one lateral lobe to the other, and continuous with the lower border of the isthmus, which ran in front of the trachea, compressing it antero-posteriorly. This was cautiously cut through upon a director passed beneath it, its division relieving the trachea of all pressure, and being almost immediately followed by a distinct improvement in the breathing. All bleeding having been carefully arrested, the wound was closed, free drainage being provided by the insertion of two tubes—one on either side of the neck.

The after-history was uneventful, the patient making a rapid recovery from the operation: the pulse never rose above 84, and the highest temperature was 99° F. After the removal of the tubes on the second day the wound quickly healed, and the patient left the nursing home at the end of three weeks. The relief afforded by the operation was immediate and very marked, the dyspnœa at once ceasing and the voice rapidly improving.

The patient was seen again on Oct. 4th, when he complained of feeling cold. The face had changed in appearance owing to the development of some solid œdema of the subcutaneous tissues of the face and lips. There was also a red flush in each cheek, so that he had the characteristic facial appearance of an early stage of myxœdema. The skin generally was dry and rather rough, and he only perspired in the axillæ. The hair was dry, the voice was husky, and the tongue was slightly swollen. The memory had become rather defective. These symptoms clearly showed that he was suffering from secondary myxœdema which had developed after the partial thyroidectomy. He was treated with thyroid tablets, and when last heard of was in good health and doing his ordinary work.

Examination of microscopical sections prepared by Dr. W. Mair from the portions of the thyroid gland which had been removed showed that they contained no normal thyroid tissue. For the most part they consisted of dense fibrous tissue, some parts of which contained but few nuclei, while others were more richly nucleated and appeared to be more recent in origin. A few small collections of epithelial cells were found. In one case they were arranged in a row, partially inclosing a space which contained a small group of epithelial cells. At one part some areas—mostly oval in shape—were found, lined by fibrous tissue, and containing a homogeneous material which was probably colloid. No normal epithelial lining to these spaces could be distinguished, and they were separated from each other by dense strands of

[1] A paper read at a meeting of the Pathological Society of Manchester on April 24th, 1912.
[2] Die chronische zur Bildung eisenharter Tumoren führende Entzündung der Schilddrüse, Verhandlungen der Deutschen Gesellschaft für Chirurgie, Berlin, 1896, Band i., p. 101.
[3] Diseases of the Thyroid Gland, p. 137.
[4] La Thyroidite Ligneuse (Maladie de Riedel), Revue de Chirurgie, tome xliv., p. 1, July, 1911.

fibrous tissue. These areas were evidently the remains of degenerated alveoli, but no portion of glandular tissue which could have been functionally active at the time of its removal could be found. The general appearance of the sections closely resembled that presented by sections from the atrophied and fibrotic thyroid gland of an advanced case of myxœdema.

The symptoms of this interesting disease are due to the progressive development in the thyroid gland of a dense fibrosis. This fibrosis may not only involve the capsule of the gland, but it may extend to the surrounding connective tissue and muscles. In Professor Jeannel's[4] case the fibrous tissue involved the sheath of the vessels and nerves in the neck and extended up to the base of the skull. This tendency of the fibrosis to extend beyond the capsule of the gland serves to distinguish the condition from the chronic atrophic fibrosis which is found in myxœdema, as the latter does not extend beyond the gland itself. This tendency to extend into surrounding tissues accounts for the early compression of the trachea and dyspnœa, which are characteristic symptoms of Riedel's disease, but which do not occur in myxœdema. As a rule, the destruction of the alveoli of the gland is not sufficiently extensive to induce myxœdema. Our case is of special interest in that the removal of a portion of the diseased gland, which apparently contained no normal tissue, was nevertheless sufficient in some way so to reduce the supply of the secretion that symptoms of myxœdema developed shortly afterwards.

Nothing so far is known of the cause of the disease, though the character of the microscopical changes suggests that it may be the result of some chronic infection. It occurs in both sexes and most commonly develops between 30 and 40 years of age, so that in our case the symptoms developed earlier than usual. The development of the disease is generally slow, but it may take place within a few months or even a few weeks. In some cases pain has been complained of in the affected gland and radiating to the ears and the back of the neck. Dyspnœa and stridor due to compression of the trachea, which is not displaced to one side or the other, are the most important symptoms, and notable because they are associated with a comparatively slight enlargement of the gland itself, which, however, becomes hard in consistence and fixed in position. The skin overlying the gland is not adherent and the lymphatic glands are rarely enlarged. The narrowing of the trachea may be accompanied by a laryngo-tracheitis, causing cough. One recurrent laryngeal nerve may be involved in the cervical cellulitis, causing paralysis of one vocal cord. It is thus evident that the disease is of great interest owing to the remarkable manner in which it may resemble the harder forms of malignant disease of the thyroid gland.

The following points are of value in distinguishing between the two diseases. Dysphagia, which is not uncommon in malignant disease, is rare in ligneous thyroiditis. The uniform enlargement of the gland, the early onset of severe dyspnœa, the freedom of the skin from adhesion, the absence of enlargement of the lymphatic glands, and the earlier age at which it usually occurs are all in favour of chronic thyroiditis.

No medicinal treatment appears to exert any influence upon the progress of the disease. When once compression of the trachea has commenced, so that there is slight stridor with dyspnœa on exertion, a sufficient amount of the diseased gland should be excised to free the trachea completely. No more tissue than is necessary for this purpose should, however, be removed, so that, if possible, a sufficient amount of secreting tissue may be left to prevent the onset of myxœdema. Delore and Alamartine state that X rays have an almost specific action in Riedel's disease, and refer to one case recorded by K. Silatschek and another under the care of M. Barjou, in which recovery followed the application of X rays. It is difficult to understand how X rays can be beneficial, as in Graves's disease they are actually employed to produce a fibrosis of the thyroid gland and they may also lead to the formation of adhesions between the capsule of the gland and the surrounding structures. We have had, however, no experience of this treatment in this disease, and consider it might be tried in an early case in which there were no urgent symptoms and there was no risk in postponing operation.

Manchester.

THE TREATMENT OF MUSCULAR AND JOINT INJURIES BY GRADUATED CONTRACTION.

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IN the following paper an attempt is made to describe a method which we adopt for the treatment of muscular and joint injuries, and for the redevelopment of wasted muscles. The treatment consists in the stimulation of the muscles by means of an induced current, but it must be clearly understood that no virtue is claimed from the electricity *per se*. It is simply a means to an end, that end being muscular contraction with the restoration of muscle function.

The instrument we find most satisfactory is one with few turns in the primary and secondary windings, and therefore of low self-induction. It is so arranged that the degrees of contraction can be controlled by manipulation of the central core, in preference to the more usually adopted "sledge" method of control. The exact form of apparatus used is of little consequence, provided it can be controlled so as to produce a graduated contraction of the muscle—that is, minimal, submaximal, or maximal contractions.

Every muscle in the body is in a state of slight continued contraction—i.e., muscular tone—and if injured this condition of tone is at once altered. A strained muscle is relaxed, stretched, and inflamed, and so is incapable of complete voluntary contraction. In many cases this disability, primarily muscular, shows itself by impairment of the function of the joint on which the muscle normally acts. The other muscles which control movement of the joint act of necessity at a disadvantage, one of their number being thrown out of action. The result of this is that the joint is affected in two ways: firstly, by the original muscular strain; and secondly, by the excessive strain caused to the other muscles, which work at a disadvantage without their fellow, and thus still further complicate the impairment of function in that joint.

The condition of impairment is the immediate result of a strain to a muscle or muscles which control the movement of a joint, and is of importance because the joint is liable to become further crippled owing to muscular wasting, the formation of adhesions, and the laxity of the whole structure caused by the absence of the normal muscular tone. That the seriousness of the early condition is not always realised is shown by the fact that following some slight injury—e.g., a sprain—one often gets a history of months of disability and pain, all of which could have been avoided if the secondary results had been prevented from supervening by the proper treatment of the condition from the first.

The type of contraction produced so closely simulates the physiological contraction of muscle that it is indistinguishable from a normal voluntary contraction. The contraction can be accurately controlled. Starting from zero, it may be gradually increased to the maximal contraction which the muscle acted on is capable of without damage, and the muscle may then be allowed to relax just as gradually.

A healthy group of muscles, when acted upon in this way, can be made to contract and relax rhythmically, so as to cause painless production of the movement of the joint on which they act. In order to describe the actual method of applying this form of treatment it will perhaps be best to describe the treatment of an actual case and then to generalise.

Take, for example, the treatment of a simple strain of the adductor longus muscle, the so-called "rider's strain." The patient is placed on a couch with the lower extremities bare. One electrode is placed under the knee of the injured leg. The knee is slightly flexed, abducted, and externally rotated. The other electrode is held in the operator's left hand, gripped between the thumb and first finger, and is brought into contact with the adductor longus. The electrode being in contact with the muscle, the muscle substance is grasped by the fingers and thumb of the hand, so that the amount of contraction may be felt. The operator's right hand controls the soft core of the coil, which is inserted and withdrawn rhythmically at a rate of about 60 times a minute. Each time the core is inserted the muscle contracts and *vice-versâ*,

and the amount of contraction is in direct relationship to the degree of insertion of the core. The electrode is moved about from place to place on the muscle, being moved only when the minimal current is passing, as otherwise pain is produced. The muscle is treated in this way for about 20 minutes, and no strapping or bandage is applied. This treatment is carried on once daily for about a week, then the patient is permitted to ride (hack). Treatment is then carried on daily for another week, with exercises in addition for the whole adductor group. At the end of a fortnight, in an ordinary case, the patient resumes hunting, being seen perhaps twice more.

Certain points in the technique which we employ may perhaps be worth mentioning.

It is necessary that the patient lie absolutely relaxed, and that no current sufficient to cause a contraction be allowed if he move or strain in any way. The right hand controls the intensity of the stimulus, whilst the left gauges the effect on the muscle; therefore the pain which a sudden movement on the part of the patient would cause can generally be prevented when one has had a certain amount of practice in treating cases. The part of the muscle which when stimulated gives the best contraction of the whole muscle varies slightly in different patients, but can readily be determined in each case. It is well to remember that the electrode should not be moved except when the core is fully withdrawn. If this be not done the patient may get a painful stimulus as the electrode is drawn along the skin, and then naturally tends to resist the next stimulus.

The length of daily treatment varies not only with each particular case, but also with the particular muscle or group of muscles under treatment—e.g., much more time may be spent on a muscle, such as the deltoid, than would be possible with the small muscles of the hand or foot. Overstimulation is followed by stiffness some hours later, and treatment on the following day quickly produces fatigue.

The coil should be so adjusted that, when the electrode is applied to the muscle and the core of the coil withdrawn, no contraction takes place. The contraction, when produced, should be of the whole muscle and not a local tetanus under the electrode. The secondary passive electrode may be placed under the knee if the leg is being treated, but in the case of the arm it is better placed between the scapulæ or in the lumbar region; if the lumbar region muscles are being treated the secondary electrode is placed between the scapulæ.

That the more usually adopted methods of treatment—viz., massage and movements—are quite capable of effecting a cure in many of these cases of muscular and joint injury is, of course, certain. However, there are cases in which the results of massage are very disappointing, and in which the muscles do not recover at all, or only very slowly (*vide* Cases 1, 4, 5). Again, it would seem that the results are more quickly obtained by this method than by massage. Cases 2 and 3 bear this out, and in Case 3, although the quadriceps was badly damaged and the patient was unable to walk on the Sunday, he was playing first-class Rugby football on the following Saturday.

It would seem that an important point of difference between massage and electrical stimulation is that the effects of the former must be produced by circulatory changes almost entirely, whilst in the latter case the beneficial results are due to the stimulation bringing about active contraction of the muscle, with all the attendant changes, chemical and circulatory, of such contraction.

That the ideal treatment of an injured muscle is to make it perform active contractions against resistance is generally accepted, but this, in the case of a badly strained or wasted group of muscles, is not possible. In a case of "rider's strain" it is often possible to make the patient adduct the thigh, but this is by means of the undamaged members of the adductor group. The strained and elongated adductor longus remains out of action whether the thigh be adducted or not. Case 6 is a good example of a group of muscles so badly wasted that they were unable to perform active movements to any degree, even after careful and prolonged treatment by the ordinary methods, but which rapidly recovered voluntary movement after electrical stimulation. Once the power of producing active movements against resistance was obtained, such movements materially aided the recovery.

The scope for the employment of this method of graduated contraction is not limited to the treatment of injuries. Some of the cases of chronic joint disease—namely, those in which the symptoms which affect the patient's comfort are due to the muscular condition—can be considerably improved, although, of course, the actual joint changes remain unaffected. In the post-operative treatment of certain lesions this method must be of value—e.g., in the case of the wrist-joint it is possible to contract the muscles of the forearm so as to move the tendons at the wrist (without interfering with the dressings), thereby preventing adhesions and wasting of the forearm from disuse. (Case 7.) We have also used this method in the treatment of fractures with very good results. (Case 8.) It is also possible to contract unstriped muscle, and we have treated chronic constipation due to atonic condition of bowel wall with very encouraging results in a few cases. The results are too recent (12 months), and too few (5), to show whether this result is permanent or only temporary.

At this stage the use of graduated contraction in dealing with adhesions which have already formed must be briefly discussed. The ordinary plan of dealing with adhesions which have formed—viz., forcible manipulation and breaking down under an anæsthetic—often yields disappointing results. The joint may be freely moveable under the anæsthetic, but in 24 hours may become distended with fluid and very painful, and often after some weeks of vigorous massage the range of movement is still markedly restricted.

The joint is stiff from two causes—the one adhesions and the other muscular spasm. If before the forcible manipulation is undertaken the muscular spasm can be overcome, at any rate in part, the chances of success are vastly improved. The increased amount of movement allowed by overcoming this spasm is sometimes astonishingly great, for if the muscles be contracted regularly the adhesions are probably stretched, and if only weak may give way altogether. If when the spasm has been got rid of the joint still be stiff, the adhesions can at this stage be broken down under an anæsthetic with much greater chance of success.

It is by a combination of methods that the best results may be obtained, and the object of this paper is to bring out the importance of graduated contraction, and not to belittle the other methods in general use. The results we have obtained show that in some cases, at any rate, graduated contraction is essential to recovery, and that in less severe cases the time necessary to complete recovery is shortened.

CASE 1. *Old sprained ankle; chronic weakness of leg.*—Female. Slipped and sprained left ankle in November, 1910. The ankle had been X rayed and seen by a surgeon; there was no fracture. Treated by skilled massage and movements for 2½ months in town. At the end of that time she was unable to walk more than about 100 yards, and had considerable pain in the ankle and up the leg. The muscles, especially the anterior tibial group and the peroneal, were much wasted in spite of the long course of massage. She was treated by the contraction method for a fortnight and could then, she said, walk a mile. The pain disappeared. At the end of a further week—i.e., three weeks in all—she was told to leave off treatment. She had some pain lasting for about a week, and then was completely cured. The anterior tibial group had hypertrophied to an extraordinary degree and overlapped the crest of the tibia. Reported six months later that she had had no further pain or weakness in the ankle.

CASE 2. *Recent sprain of ankle.*—Male, aged 50. May, 1911, severe sprain of right ankle caused by slipping when playing golf. Patient was unable to bear any weight on the leg. Treated by graduated contraction of peronei and anterior tibial group for 20 minutes daily for three days. He was then able to walk with comfort and again started golf. Seen again at the end of a week, and then stated he had had no further trouble with the ankle.

CASE 3. *Partial rupture of quadriceps.*—Male, aged 26, was kicked on the thigh playing football. He was unable to move the leg and could not continue the game. Seen next day. He had ruptured some fibres of the quadriceps; the leg was very painful and he was unable to use it. Treated by graduated contraction of the whole quadriceps for four days. Then allowed to run. Next day allowed to kick the ball about, and on the following Saturday—i.e., one week from original injury—was playing in first-class Rugby football.

CASE 4. *Rider's strain.*—Male, aged 24. Rider's strain in January, 1911. Treated by massage. Did not hunt any more that season. Started cubbing this season, but on first day's hunting "leg went again" and he had to go home. Treated for five days; allowed to hack. Treated for four days longer; allowed to hunt. He had no pain or weakness, although hunting regularly since. Was seen again twice since resuming hunting. Reported three months later that he had had no further trouble with the leg and had been hunting regularly.

CASE 5. *Rider's strain.*—Severe strain of the left adductor longus in November, 1911. Two years before this he had had strain of same muscle which had never completely recovered, and always caused some pain after riding or when attempting to jump. The acute strain did not improve with ten days' massage and he had some pain when walking. The adductors were treated by graduated contraction for seven days, 20 minutes each day. He was then able to hunt, and reported ten days later that he had had no further pain in the leg. Seen again March, 1912, and reported that, although hunting hard during the interval, there was no recurrence.

CASE 6. *Wasting of thigh muscles, resulting from traumatic dislocation of left hip.*—The patient dislocated left hip by a fall hunting in

December, 1907. The dislocation was reduced six hours after the accident. Five months later patient was still very lame owing to great weakness of the quadriceps and adductor groups. He had had treatment by massage and exercises, and had been encouraged to use the leg, but owing to the muscular weakness was unable to do so. Treated by graduated contraction for two months, 27 applications in all. Muscles recovered completely, but leg still a little smaller than opposite limb. However, patient was no longer lame and was able to ride, &c., as before.

CASE 7. *Removal of semilunar bone.*—In February, 1911, the semilunar bone was removed from wrist, the bone having been dislocated by an accident two months previously. Treatment of the forearm muscles commenced two days after the operation. The bandages, &c., were not interfered with, as all the necessary stimulation was obtained in the upper part of the forearm. The patient was at work a fortnight after the operation.

CASE 8. *Pott's fracture.*—Sept. 29th, 1910. The patient was a short, heavy man with Pott's fracture in the leg, and a good deal of displacement. Fracture put up under an anæsthetic on 29th. Immobilised in a Croft plaster-of-Paris splint with hinge down the back. X ray photograph showed bones to be in excellent position. Four days later treatment of the muscles of the leg by graduated contraction was commenced. One side of the hinged splint was carefully removed, and the leg held immobilised to the remaining part of the splint by the nurse. The muscles were contracted for ten minutes; then the splint was reapplied to that side and removed from the opposite side of the leg, and the remaining muscles treated. The patient walked with the aid of two sticks in four and a half weeks, and a week later gave up the sticks and walked perfectly without support.

The ultimate result was excellent. Further X ray photographs showed that the bones had united in perfect position, and the patient made a complete recovery, and reported 12 months later that he had suffered no disability as the result of the accident. The amount of wasting in this case was very slight. The calf on the injured side at the end of a week was only slightly smaller than the other, and the tone of the muscles was recovered very quickly. The ankle-joint was moved from the first by the muscles contracting. The slight amount of movement, which must of necessity have taken place between the bone ends at the site of fracture, gave rise to no pain and did not cause excessive callus formation.

CASE 9. *Internal derangement of right knee.*—Male, aged 21; April, 1911. History of having "damaged" the knee when playing football four years ago; again three years ago, and from time to time since. The knee swelled and patient had had to lie up from time to time. Last injured two months ago, since which time the knee had been weak and felt as if it "would go"; most noticeable on going down stairs. He had been treated with hot fomentations, iodine, massage, &c., at different times. When examined the right thigh was markedly wasted. There was lateral movement of the knee-joint, some tenderness along joint line on inner side; no thickening of synovial membrane, no fluid, and very slight creaking. Treated daily for a fortnight, and then told to do certain exercises.

Reported a week later that he had no further trouble with knee, although in playing golf he had given it just the kind of twist which used to cause it to swell up. A letter three months later stated that the knee was quite sound and the patient was rowing in a winning boat. Six months later reported that he had no further trouble with the knee.

Harley-street, W.

THE SPA TREATMENT OF NEURITIS.[1]

BY WILLIAM ARMSTRONG, M.R.C.S. ENG.

NEURITIS is an ailment very interesting to the spa practitioner, its frequency, its refractory behaviour under treatment, and the peculiarly wearing nature of its pain marking it out for special study and attention. That it is more frequent than formerly is certain, for, allowing on the one hand for the sceptic's view that we are apt, through the dictates of fashion and the desire for originality, to call cases of simple neuralgia by the more high sounding title of "neuritis," and on the other for the still more modern observers who hold that most of these cases should go by the name of "fibrositis," there are still among the patients of all spa practitioners a considerable number who have undoubted neuritis as I will try to describe it. It seems probable that the acknowledged shortage in the number of cases of acute articular gout (a plus formation of uric acid being in evidence) is made up for by the presence of many suffering from irregular gout (with a minus uric acid excretion) in whom neuritis makes its appearance; and that, while gout itself is not decreasing, the conditions of modern life, with its ever-increasing nerve strain, have diverted the gouty stream to some considerable extent into the channel of the nervous system.

I will try to record briefly certain differences between neuralgia and neuritis, as, from the point of view of spa treatment, the differentiation is most important. The term "neuralgia," in my opinion, should be reserved for those cases in which the pain is usually paroxysmal in character, and which are not associated with organic lesions of any part of the nervous system. In neuralgia there are almost always intervals in the attacks when no pain is felt, and the trouble is usually confined to the outer sheath of the nerve. Neuritis, on the other hand, is an inflammation of the actual nerve itself. Often commencing as a perineuritis, it involves the interstitial connective tissue of the nerve, and in a certain number of cases (and these are the most intractable) the actual nerve fibres become affected with parenchymatous or degenerative neuritis. In perineuritis the connective tissue round the nerve is red and swollen and the small blood-vessels of the sheaths are dilated with or without hæmorrhages; this condition is followed by serous exudation between the sheath and the bundles of nerve fibres which, making its way between those fibres, often causes interstitial neuritis, and is sometimes followed by degeneration

In parenchymatous neuritis the nerve fibres break down and degenerate—this very serious condition may be either primary or secondary to an interstitial neuritis. The pain of neuritis is characteristic: it is boring or burning, being often likened to "a large toothache"; it is, as a rule, constant, is markedly increased by movement of any kind, especially by jerks or jars; and acute exacerbations are frequent in the early morning hours from 1 to 5 A.M. There is marked tenderness where the nerve leaves the spine and also along its whole course; at first there are paræsthesia and hyperæsthesia; later anæsthesia and atrophy of the muscles supplied by the affected nerve; electrical excitability at first increased, being afterwards diminished. As the disease progresses changes take place in the nutrition of muscles, skin, nails, and joints. Even from this very fragmentary and incomplete *résumé* it will be evident that we are dealing with an ailment of a serious, far-reaching, and important character. The onset of this disease is frequently preceded by a lowered condition of bodily or nerve health, and worry and anxiety are often predisposing causes.

Neuritis may be divided into two groups: (1) Multiple peripheral neuritis, and (2) mono-neuritis.

Multiple peripheral neuritis is usually caused by the action of toxic products or micro-organisms on the general nervous system. The following, either alone or in combination, have been described as causatives: Alcohol, lead, arsenic, carbon disulphide, and carbon monoxide; the poisons of diphtheria and certain other infectious diseases; tropical infections such as beri-beri, diabetes, syphilis, gonorrhœa, pregnancy, gout, and chronic rheumatism; and where no cause was obvious the term "idiopathic" has been used.

Mono-neuritis may be divided into: (*a*) acute and (*b*) subacute and chronic. The chief causes are: (1) Gout; (2) rheumatism; (3) diabetes; (4) arthritis; (5) auto-intoxication—(*a*) gastro-duodenal, (*b*) intestinal, (*c*) defective elimination by lungs, skin, and kidneys; (6) chill (often to neck), especially through motoring (open landaulettes being the most dangerous); (7) injury to nerves; (8) extension of inflammation of other structures to nerves; (9) compression of nerves by local induration, most frequent at point of issue from spine, or from local pressure as in metatarsalgia; and (10) pressure of growths, malignant or otherwise.

The actual spa treatment of neuritis.—I would like to emphasise the following points: 1. The need in all cases for rest—general, local, or physiological—as may be indicated. 2. The avoidance of measures which jar, jerk, press upon, or irritate the tender structures—such as violent massage or movement, or over-strong currents of electricity. 3. The necessity for using strengthening rather than lowering treatment. 4. And, more than all, a determined attempt to formulate the actual condition of the affected nerve or nerves, especially the amount of the inflammation present, for on this both the prescription of the spa treatment and its success depend. I feel that, as a rule, we spa practitioners are apt to be as regards treatment men of definite action. When so many excellent methods of treatment are available, of which patients are naturally anxious to make immediate use, and with the fact before us that the possible visit is only for three or four weeks, and that during this time a certain amount of amusement, sight-seeing, and holiday is expected, it is most difficult to have to suggest to a patient rest in bed for one or two weeks (which could be taken at home at a nominal cost), or the wearing of a splint up to the axilla for the sciatic, or of an absolute resting appliance for the cervico-brachial; but few of us have failed to notice how in acute and subacute cases, where no relief is being obtained from treatment, a fractured fibula or an attack of

[1] A paper read before the Balneological and Climatological Section of the Royal Society of Medicine on March 6th, 1912.

pneumonia (or other illness necessitating confinement to bed) has given speedy relief to the nerve suffering.

The treatment of multiple peripheral neuritis.—1. The discovery, stoppage, and avoidance of the exciting cause or causes. 2. Rest: (*a*) general; (*b*) local. Many of these cases require to be kept in bed with avoidance of noise, worry, and anxiety, often being separated from friends and relations. 3. The elimination of toxins or any other poisons present. 4. The building up of the nervous system generally. 5. The drinking of the various natural waters on account of their eliminating properties. 6. The stimulation of skin action. This is most effectively carried out by the use of superheated air. The Greville method, so much used in Harrogate, Bath, and Buxton, possesses great advantages, as it can be given in bed without moving the patient at all. It is not nearly so exhausting as many other methods, and is practically free from the danger of scorching the skin. 7. Application to the whole spine of hot packs of fango or radio-active earth. The latter has given much the better result, as it contains much actinium and does not lose (as is so often the case with fango) its specific radio-activity through carriage. Later, as the severity of the pain decreases, baths of warm mineral water (with or without oxygen), with a very careful use of the hot *under water* douche to the spine and to the affected nerve, strong douching being contra-indicated as likely to increase pain.

Most valuable is ionisation with solution (3 per cent.) of sodium salicylate or of cocaine (5 to 10 per cent.) with a constant current of low strength, 3 to 15 ma., followed in the latter case by light applications of the electric cautery over any specially tender spinal points, the cocaine ionisation acting as a local anæsthetic. The constant current water or Schnée bath, high-frequency, wave, and static applications are useful in the more chronic stages, but should always be low in strength. The Plombières douche where indicated is valuable. Massage should be used with the greatest care and gentleness, and only when the acute symptoms have disappeared. The injection of strychnine nitrate gr. 1/30 to gr. 1/10 once daily is valuable in many cases.

Mono-neuritis is much the more common form met with in spa practice. It is of the utmost importance as regards treatment to attempt to decide the exact condition of the affected nerves as regards irritability.

Acute mono-neuritis.—Absolute rest of the affected part. Elimination of toxic products by drinking the various mineral waters; through the bowels and liver by waters such as Harrogate, Llandrindod, and Strathpeffer; through the kidneys, lungs, and skin by the radio-active waters of Bath and Buxton. In acute mono-neuritis strong douching and massage are distinctly harmful; superheated air by the Greville method and packs of radio-active earth and fango are useful. Applications of the electric cautery over the exit of the inflamed nerves, the tenderness being found in the cervical region where the brachial plexus is involved; in the upper dorsal when the circumflex and ulnar nerves are implicated; and the lower dorsal, lumbar, and sacral when the nerve supply to the lower extremity is affected.

Ionisation of cocaine with the constant current produces more or less skin anæsthesia and diminishes the pain of the electric cautery, the application of which should be made very lightly, the skin not being broken and the parts being covered at once with an antiseptic dusting powder. The application should only be made over the points where tenderness is found on pressure, and may be repeated every two or three days. Blisters over the same points are useful, but they are more painful, cannot be frequently repeated, and are not so effectual.

In subacute or chronic cases warm mineral baths with hot under water douches are helpful, and also water massage by Aix, Vichy, or Buxton methods—but these must be given with greatest care—and may be followed by very gentle passive movements of any stiffening joint, especially the shoulder. Moor or peat baths are often useful. The Schnée bath with the constant current in most cases (with or without ionisation with sodium salicylate, or iodine preparation), and in the more chronic the sinusoidal current, the static, wave, or high frequency are all useful as the cases progress toward recovery. If the urine shows an excess of aromatic sulphates or a high percentage of indican, skatol, cresol, and phenol, the Plombières douche is very valuable, or if there is much gastric atony and splashing gastric lavage is indicated.

For the general state of the nervous system (which is almost always disturbed and irritable) no remedy has proved so valuable in my hands as the oxygen bath. The oxygen is much more effective if gradually produced in the bath at the time of administration than when charged by oxygen from a cylinder; by mixing in the bath sodium perborate and manganese borate from 35 to 40 pints of oxygen is steadily evolved during 15 to 20 minutes. It can be added to any mineral water, but is most effective when given with radio-active water, the oxygen and radium emanations mutually increasing each other's activity. The effect is soothing and tonic, and aids the elimination of waste products.

The question of radio-activity of many natural waters and the therapeutic value of this property is exciting much interest and some controversy both here and on the continent. The work of Lazarus, Saubermann, Deutelmoser, Bergel, Bickel, His, Gudzent, and many others shows that by the use of radium emanations dissolved in water, of the radio-oxygen bath, and inhalations of radio-oxygen emanations the activity of excretion is much increased—uric acid by the kidneys, urea and butyric acid by the skin, and carbon dioxide by the lungs being the products whose excretion is specially enhanced. This should be welcome news to spa practitioners, as it puts on a firm scientific basis the claims for, and the results shown by, the various mineral waters which have been the subject of scepticism, more especially those waters which are wanting in taste or odour and which have no definite action on the bowels.

Buxton.

A NOTE ON

THE TEMPERATURES OF ONE THOUSAND CHILDREN.

BY MARY H. WILLIAMS, M.B., B.S. LOND., D.P.H. CANTAB.,

THE children whose temperatures I have recorded were among those examined under the Medical Inspection of Children Act. They were all between the ages of 12 and 14 years, and the great majority were in no way selected. A few were what are called "specials"—i.e., children picked out either by the teacher or myself for some marked defect. The temperatures were all taken in the mouth, with "30-seconds" Kew certified thermometers, kept under the tongue, with closed lips, for not less than 10 minutes. It is necessary to watch the children to see that they really keep the mouth shut. The temperature of the room must be noted before beginning the observations, as it is useless to try to obtain reliable results in a room where the temperature is below 56° F.

The method of work I adopt is as follows. The children are seated in rows, about a dozen at a time, and the temperatures are marked down in the day list. I have no knowledge of the children or their names, and frequently take over 50 temperatures a day. Hence I do not connect any special temperature with a given child. Sitting in such a position that I can see the row of children, I meanwhile examine other children. The names of these are entered in a register, with columns for time of day, age, sex, height, weight, family histories, &c., and with special columns marked "Tuberculosis," "? Tuberculosis," "Rheumatism," "? Rheumatism," "Tonsillitis," and "Normal." The last of these headings ("Normal") I soon found it necessary to delete, substituting "Not suspected of tuberculosis, rheumatism, or tonsillitis," as I came to the conclusion that there were few normal children in our elementary schools. I examine each child and then place a distinct mark in the appropriate column. The temperatures are filled in afterwards, so that at the time the child is placed under a particular disease heading I do not know his temperature.

The accompanying table will show the percentage of children, under each heading, exhibiting the various temperatures, but for convenience I will give a short summary.

Among the entire 1000 children the maximum percentage is that of children exhibiting a temperature of 100° F., and the two next highest are those at 99·6° and 99·8°. Only 13·5 per cent. of children have temperatures below 99°, and 55·5 per cent. have temperatures not under 99·6°. Among the children in Group I. ("Not suspected of pulmonary tuberculosis, rheumatism, or tonsillitis") the figures are better.

The maximum percentage is at 99°, with the two next at 98·4° and 99·2°. The figures under Group II. ("With tonsillitis") are not worth considering, as they are small and the condition included various indefinite conditions of the throat.

The first group in Table I. giving a definite diagnosis of disease is Group III., headed "With pulmonary tuberculosis." The diagnosis of this disease was made entirely on the physical signs, and cases presenting symptoms only were entered in Group IV. as "? Pulmonary tuberculosis." In the latter group were placed children with bronchiectasis, though according to Dr. A. C. Jordan,[1] medical radiographer at Guy's Hospital, these cases are really cases of fibroid tuberculosis; and also cases said to have recently had "influenza," especially when I could not ascertain that this diagnosis had been made in presence of an epidemic. In Group III., "Pulmonary tuberculosis," we find the maximum percentage of "growing pains" or rheumatic fever; (*b*) mitral disease; and (*c*) chorea. The point in favour of the last-named group being included is well discussed by Dr. Mark S. Fraser[2] and by Dr. G. F. Still.[3] Further evidence that my cases in the rheumatism table are really rheumatic is given by the very high percentage of rheumatic fever recorded among their parents and grandparents—viz., 24·5, as compared with 3·2 among other children.

In regard to Groups III. and V., I would say that no child comes into both. The two diseases, pulmonary tuberculosis and rheumatism, do not coexist in an active form in the same child.

Table II., for boys and girls, given separately, does not require separate detailed consideration; there does not appear to be any very marked difference between the sexes.

In presenting this brief outline of the observations made, I would note one point wherein these observations differ from

TABLE I.—*The Temperatures of 1000 Children given in Percentages.*

Groups.	No of children.	Degrees Fahrenheit.					Degrees Fahrenheit.					Degrees Fahrenheit.				
		98·0	98·2	98·4	98·6	98·8	99·0	99·2	99·4	99·6	99·8	100·0	100·2	100·4	100·6	100·8
I.—Not suspected of pulmonary tuberculosis, rheumatism, or tonsillitis	254	1·6	0·4	22·8	4·7	11·0	27·6	15·7	10·6	2·4	1·6	1·2	—	—	—	—
II.—With tonsillitis	32	—	—	—	—	—	—	3·1	15·6	25·0	12·5	28·1	12·5	3·1	—	—
III.—With pulmonary tuberculosis	247	—	—	1·2	—	0·4	2·8	6·9	13·4	13·8	18·2	23·1	10·9	6·5	2·0	0·8
IV.—Suspected of pulmonary tuberculosis	168	0·6	—	3·0	0·6	0·6	7·7	10·7	14·3	17·9	18·5	16·7	7·1	2·4	0·6	—
V.—With rheumatism	255	0·4	0·4	5·5	0·4	0·8	3·9	5·9	6·7	15·3	16·5	29·0	8·2	3·5	3·1	0·4
VI.—Suspected of rheumatism	44	—	—	2·3	—	—	9·1	6·8	13·6	22·7	11·4	20·5	11·4	2·3	—	—
Totals	1000	0·6	0·2	8·1	1·4	3·2	10·4	9·4	11·2	12·7	13·1	18·0	6·9	3·1	1·4	0·3

TABLE II.—*The Temperatures, given in Percentages, of (a) 400 Boys and (b) 600 Girls.*

Groups.	No. of children.	Degrees Fahrenheit.					Degrees Fahrenheit.					Degrees Fahrenheit.				
		98·0	98·2	98·4	98·6	98·8	99·0	99·2	99·4	99·6	99·8	100·0	100·2	100·4	100·6	100·8
I.—Not suspected of pulmonary tuberculosis, rheumatism, or tonsillitis	(*a*) 111	1·8	0·9	25·2	7·2	7·2	30·6	14·4	11·7	—	—	—	—	—	—	—
	(*b*) 143	1·4	—	21·0	2·8	14·0	25·2	16·8	9·8	4·2	2·8	2·1	—	—	—	—
II.—With tonsillitis	(*a*) 11	—	—	—	—	—	—	9·1	27·3	27·3	9·1	27·3	—	—	—	—
	(*b*) 21	—	—	—	—	—	—	—	9·5	23·8	14·3	28·6	19·0	4·8	—	—
III.—With pulmonary tuberculosis	(*a*) 117	—	—	1·7	—	—	0·9	9·4	16·2	16·2	21·4	20·5	8·5	2·6	2·6	—
	(*b*) 130	—	—	0·8	—	0·8	4·6	4·6	10·8	11·5	15·4	25·4	13·1	10·0	1·5	1·5
IV.—Suspected of pulmonary tuberculosis	(*a*) 59	1·7	—	3·4	1·7	—	10·2	10·2	15·3	12·6	20·3	16·9	6·8	—	1·7	—
	(*b*) 109	—	—	2·8	—	0·9	6·5	11·0	13·8	20·2	17·4	16·5	7·3	3·7	—	—
V.—With rheumatism	(*a*) 86	1·1	—	8·1	—	1·1	3·5	10·5	7·0	11·6	19·8	25·6	5·8	3·5	2·3	—
	(*b*) 169	—	0·6	4·1	0·6	0·6	4·1	3·6	6·5	17·2	14·8	30·8	9·5	3·6	3·6	0·6
VI.—Suspected of rheumatism	(*a*) 16	—	—	—	—	—	12·5	6·25	6·25	37·5	—	18·75	18·75	—	—	—
	(*b*) 28	—	—	3·6	—	—	7·1	7·1	17·9	14·3	17·9	21·4	7·1	3·6	—	—
Totals	(*a*) 400	1·0	0·25	9·75	2·25	2·25	11·5	11·0	12·75	11·5	13·75	15·5	5·5	1·5	1·5	—
	(*b*) 600	0·3	0·2	7·0	0·8	3·8	9·7	8·3	10·2	13·5	12·7	19·7	7·8	4·2	1·3	0·5

of children at the temperature of 100°, and only 11·3 per cent. with temperatures below 99·4°.

In the brief summary I am now giving I will deal only with the children in whom I have made a definite diagnosis of disease, and hence will omit discussion of the divisions of the tables marked "? Pulmonary tuberculosis" and "? Rheumatism," merely saying that in the main the maximum and the minimum occur at or near the same points in these two latter groups as in the divisions for "Pulmonary tuberculosis" and "Rheumatism" respectively.

In Group V. the maximum percentage again occurs at the temperature of 100°, and the percentage of children with this temperature is even greater than in Group III., reaching the figure of 29 per cent. As evidence of rheumatism I have taken: (*a*) clear history of "growing pains" or rheumatic fever; (*b*) mitral disease; and (*c*) chorea. The point in favour of the last-named group being included is well discussed by Dr. Mark S. Fraser[2] and by Dr. G. F. Still.[3] Further evidence that my cases in the rheumatism table are really rheumatic is given by the very high percentage of rheumatic fever recorded among their parents and grandparents—viz., 24·5, as compared with 3·2 among other children.

In regard to Groups III. and V., I would say that no child comes into both. The two diseases, pulmonary tuberculosis and rheumatism, do not coexist in an active form in the same child.

Table II., for boys and girls, given separately, does not require separate detailed consideration; there does not appear to be any very marked difference between the sexes.

In presenting this brief outline of the observations made, I would note one point wherein these observations differ from much medical work. In offering a diagnosis of a condition present there is opportunity for much difference of opinion. But in regard to the existence of the temperatures I have recorded the question is one of fact. Any practitioner who will take the time and trouble, and observe the same methods of work, will obtain similar results. I do not for one moment suggest that the area I have worked in is exceptional, or that special skill is needed. Another practitioner may assign different causes to the varying degrees of temperature found, but, whatever the causes, the fact remains that some 55·5 per cent. of our elementary school children have temperatures not under 99·6° F. So far as my observations go, this fever is a constant condition. I am working out this point on children whose temperatures I have repeatedly

[1] "Peribronchial Phthisis," Practitioner, February, 1912, p. 252.

[2] Practitioner, March, 1912, p. 461.

[3] Common Diseases and Disorders of Childhood, p. 454.

taken over periods of two years or more, and am also working out details in regard to the relation between the temperatures and the heights and weights, and the time of day. These statistical results, among others, will shortly be published by the Eugenics Laboratory of the University of London.

It remains to make certain observations on the temperature of the human body in general, and in children in particular. Much work has been done on the question, and from it we will select two series of observations—one by Sir T. Clifford Allbutt on himself,[4] and the second by Dr. N. E. Bardswell and Mr. J. E. Chapman.[5] The results of these two careful and detailed sets of observations are in the main in agreement.

For the hours corresponding to those during which my own determinations were made the temperatures recorded by these observers vary from 98·2° to 98·6°, thus indicating as normal a much lower range than any I have found in the children.

Schäffer, in an interesting paper,[6] states that for the last ten years he has systematically taken the rectal temperature of his patients, particularly children, and that as the result of his observations he is convinced that the temperature of the normal human body is lower than is commonly stated. The normal variations lie between 96·8° and 98·2° F., and, to quote his words, "every rise indicates a disturbance of health."

Two points are commonly raised in regard to pyrexia in children. First, that the condition is due to nervousness; and secondly, that children's temperatures "run up for nothing." In regard to the first point there is a very definite foundation for it. Nervous children bulk largely among children with raised temperatures—but the typical nervous child is the rheumatic child, and the rheumatic toxin is the agent causing both the nervousness and the pyrexia. In regard to the second point, this is a mere statement that many physicians find raised temperatures in children, after some slight disturbance, without being able to ascertain the cause. It by no means shows that there is not some constitutional cause present, provoked into action by the slight disturbance noted.

I stated at the beginning of this paper that my observations had been made during work under the Medical Inspection Act. This Act has now been in force three years. Information in regard to the existence of the two great diseases which are undermining the health of our children, tuberculosis and rheumatism, is conspicuously absent from the report of the chief medical officer to the Board of Education. The percentage for tuberculosis among routine cases for 1910 is given as 0·67,[7] a figure which is plainly inadequate in face of the evidence published by Professor Karl Pearson,[8] and of the facts stated by Dr. Woods Hutchinson[9] and Dr. Jordan. The question of rheumatism appears to be generally regarded as so unimportant that no general table can be given in the report for lack of material. I would suggest that if the children's temperatures were taken as a matter of routine, inquiry would of necessity soon follow in regard to the pyrexia found.

Colwall.

[4] Journal of Medicine and Physiology, 1872, p. 108.
[5] Some Observations upon the Deep Temperature of the Human Body at Rest and After Exercise, Brit. Med. Jour., May 13th, 1911, p. 1106.
[6] Deutsche Aerzte Zeitung, Dec. 1st and 15th, 1911.
[7] Report of Chief Medical Officer to the Board of Education for 1910, p. 71.
[8] The Fight against Tuberculosis and the Death-rate from Phthisis.
[9] British Journal of Tuberculosis, February, 1912.

THE EQUITABLE LIFE ASSURANCE SOCIETY.—The report of the Equitable Life Assurance Society for 1911 points out that the society is now in its 150th year. At the end of this long period the society gives satisfactory evidence of continued vitality and progress, as shown during the past year by a new business which is much above the average, a considerable increase in the premium income, a lowered rate of expense, an increased rate of interest earned, and an addition of over £136,000 to the funds, which amounted at the end of the year to £5,241,950. The rate of interest earned on the total funds was £4 1*s.* 0*d.* per cent. before deduction of income tax. The society pays no commission, and the expenses were at the rate of only 6·63 per cent. of the premiums, or 3·41 per cent. of the total income.

FAMILY SUSCEPTIBILITY AND VIRULENCE IN SCARLET FEVER.

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WE are so unaccustomed in recent years to experience epidemics of scarlet fever of any marked degree of severity that it is of value to record a distinct deviation of type, whether in respect to virulence, susceptibility, or age. It is well known that scarlet fever is a disease which commonly attacks children. Above the age of puberty its incidence rapidly decreases, though at no period of life, however advanced, is there an absolute immunity; cases of scarlet fever after the age of 95 years are on record. Murchison, in his analysis of nearly 150,000 cases in England and Wales, notes that 63·8 per cent. were under 5 years, 31·8 per cent. between 5 and 15 years, and only 4·4 per cent. above 15 years. Age-incidence, however, varies somewhat in different epidemics.

With regard to susceptibility, it is common to find a family predisposition. Several members of a household may take the disease—often during the same epidemic—and it is not infrequently observed that the disease as manifested by members of one family is inclined to show the same degree of mildness or severity. According to Trousseau, "scarlatina epidemics may be full of danger for an entire population, or they may assume this character only for a single family. The malignancy limits itself in a measure to a single hearth, and in such cases the disease is malignant for all persons that live within its circle." Fortunately, the type of scarlet fever seen in a family so predisposed is usually mild, and a history similar to that of the household whose record is to be here noted has so much of the tragic element as to raise in the lay breast a panic which is not justified by reference to the case mortality of the epidemic as a whole.

During the last few years Aberdeen has experienced an increased epidemicity of scarlet fever. In 1908 there were notified 1262 cases, and there was a case-mortality of 1·3 per cent.; in 1909 there were 1029 cases, with a mortality of 1·1 per cent.; in 1910 674 cases, with a mortality of 1·0 per cent.; and in 1911 1257 cases, with a mortality of 2·0 per cent. In only one instance during these years did more than one member of a family die from scarlet fever, and in that instance the fatal complication, a broncho-pneumonia, occurred in convalescence from the disease.

The age-incidence of these epidemics is worthy of notice. It differs considerably from the incidence noted by Murchison in his multitudinous cases. In 1909 the proportion of cases above 15 years was 17 per cent., in 1910 12 per cent., and in 1911 7 per cent. The mortality among such cases was 2 per cent. It is interesting, by way of comparison, to note that in Manchester, while the scarlet fever case-mortality during 1910 was 3·46 per cent., the mortality in the cases occurring between the ages of 25 and 30 was as high as 7·1 per cent. This must be a very exceptional fatality at such a period of life.

The subject of this communication was a houshold consisting of six members—namely, father, mother, two sons (18 and 26), and two daughters (22 and 30). They lived in a small flat of four rooms.

G., a son, aged 18 years, took ill on Oct. 22nd, with vomiting and sore-throat. He was seen by the family medical attendant on the 24th, and was then suffering from what the doctor describes as a typical attack of fairly severe scarlet fever, with high temperature, well-marked scarlatinal rash, and characteristic throat and tongue. He was delirious, according to a brother's statement, and, according to his own, his joints were all sore. He got up out of bed two and a half weeks from the onset. He was admitted to the City Hospital on Nov. 16th—i.e., in his fourth week—and was then desquamating freely and typically on hands and feet.

The next to take ill was A, aged 22 years, a delicate girl, with lateral curvature of the spine and a history of recent rheumatic fever, anæmia, and mitral disease. She came home on Oct. 27th from her work as a typist, complained of feeling ill, and went to bed. The medical attendant saw her on Oct. 28th and had no doubt of the nature of the disease, though the scarlatinal attack was a mild one. There seems to have been no joint trouble, as might have been expected

from the rheumatic history, conjoined with the fact that a large proportion of cases throughout the epidemic suffered from arthritis. The medical attendant saw her on the 30th and 31st, and was called on the last-mentioned date at 11 P.M., as she had become worse. He found her then with what he describes as a rash which showed the characteristic crescentic outline of measles, but which was rather dusky, and next day was purplish and petechial. There were present the other concomitants of measles, running at the nose and eyes, and a hard barking cough. There is no note of Koplik's spots. She died early on Nov. 2nd. It may be remarked here that the girl had, in common with the very great majority of town-bred people, a history of a previous attack of measles. As bearing on this point also it is necessary to mention that there was at the time a concurrent and very extensive epidemic of measles in Aberdeen and that in each of the families of two married brothers were several cases of measles.

On Oct. 28th a second son, J., aged 26, took ill. He, in his own words, felt hot and weak, had a sore-throat, and pains in the small of his back. He had no headache. The rash came out on Oct. 29th, and was a well-marked "small red rash" described by the medical attendant as a typical scarlatinal rash. There was no delirium. He began to get up on Nov. 9th—12 days from the onset. On admission to hospital on the 15th he was found to be peeling freely on the hands. He also showed, curiously enough, a faint punctate redness on the trunk, reminiscent of a recent scarlatiniform rash.

The fourth member of the family to be attacked was a robust, healthy woman, M., aged 30, employed in a baker's shop. She took ill on Nov. 11th. She was delirious and much fevered on the 12th, and had intense headache, an abundant scarlatinal rash, and a very much swollen throat. On the 14th the rash was becoming dusky, and on the 15th it was livid and almost hæmorrhagic. On the evening of the 14th symptoms of broncho-pneumonia appeared, and she died on the morning of Nov. 15th.

The fifth victim was the father, aged 62 years, a sawmiller, who came home on Nov. 13th feeling weak and ill, and took to bed. He was vomiting and delirious on the 14th. His rash was slight and not very definitely scarlatiniform, and the general condition was one of extreme prostration, unconsciousness, sighing respiration, and feeble pulse. He was admitted to the City Hospital on Nov. 15th with his two sons. The rash noted on admission was nothing more than a faint dusky mottling, most marked on the trunk. There was no petechial hæmorrhage into the skin. The tongue was clean and had the peeled look of a scarlatinal tongue, and the fungiform papillæ were distinctly swollen. The throat was injected and swollen, but there was no formed exudate. The temperature was 103° F.; the pulse was 118 and of low tension. The radial arteries were markedly rigid. Urine was passed incontinently, and none was collected for examination. There were constant plucking at the bedclothes and occasional twitching of tendons. The extreme prostration continued throughout the night, and death occurred early on Nov. 16th.

The manifestation of such an extreme degree of virulence must at once raise the suspicion that the disease was not scarlet fever but some other zymotic of more proved fatality. The only other that could account in any degree for the facts is typhus fever. The toxic nature of the disease, the extreme and sudden prostration in the fatal cases, the delirium, and the livid, mottled, almost petechial eruption present in three of the five cases all fit into the picture of typhus fever. The morbilliform rash in the case of the girl A might have been an efflorescence sometimes seen as an accompaniment, usually a prodrome, of typhus fever. The broncho-pneumonia, again, is a common feature in that disease. The argument that these would be isolated instances of typhus fever, when it is usual to find a demonstrable connexion with previous cases, is not unassailable. The only cases of typhus fever in Aberdeen since a well-known epidemic in 1904–05 occurred last year, when three of a family suffered from a typical typhus fever, there being no other known cases in the city.

It is undoubted, on the other hand, that none of the symptoms described is absent in that fatal type of scarlet fever classed as "toxic" or "malignant." The onset of such cases is often sudden, with vomiting, high fever, severe brain symptoms, and profound prostration. The rash is usually livid and dusky, with a tendency to petechiæ, indeed, much as described by the medical attendant. Case-mortality in such a variety of the disease is much greater than that of typhus fever; indeed, few or none recover. The desquamation seen in the only two who recovered is a very strong corroboration of the diagnosis. Even the morbilliform rash, otherwise puzzling, might be brought into line by its being conceived to be that variety of rash simulating measles which is so often noted in so-called "septic" scarlet fever. If it is to be taken as being a real measles exanthem which became, as described, purplish and petechial in 24 hours, one has the remarkable occurrence of the death of one member of a family from the toxic type of one infectious disease, and almost simultaneously the death of two others from the toxic type of another.

Having reviewed this unusual series of cases as a whole, one is led to the conviction that these were true cases of scarlet fever. That they presented such remarkable features, with respect to age and fatality, is a sufficient justification for their being recorded.

Aberdeen.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

MEDICAL SECTION.

Nodular Leukæmia.

A MEETING of this section was held on April 23rd, Dr. FREDERICK TAYLOR, the President, being in the chair.

Dr. GORDON R. WARD read a paper on Nodular Leukæmia. He said: The term nodular leukæmia is chosen to include all those cases of leukæmia in which nodules or tumours of leukæmic growth have been found in various parts of the body and have been obvious, to the sight or by inference, during life. It is used purely as a clinical term. Cases of this sort have been reported under a great variety of titles, such as mycosis fungoides, chloroma, Mikulicz's disease, Kaposi's disease, sarcomatosis, &c. These terms do not in the least suggest that there is any possible connexion between the cases described. It is not suggested that all the cases described under the above names are cases of nodular leukæmia, but merely that the latter may in its clinical manifestations approach the syndromes to which these various names have been applied. It may seem at first sight that it is not, in the present state of our knowledge, of much importance to the clinician, and of even less moment to the patient, whether his disease is called sarcomatosis or nodular leukæmia. As a matter of fact, there is one great point to be gained if the conception of nodular leukæmia should become more general, and this point is the avoidance of operations which are later proved to have been unjustifiable. The following have been performed—viz, excision of the upper jaw, complete mastoidectomy, amputation of both breasts, laparotomy, and, of course, appendicectomy. The conceptions of disease, drawn from such terms as those quoted, seem clear enough and do not in the least suggest that the diseases in question have anything in common, but new facts have come to light which provide many connecting links and necessitate a reconsideration of the position. For instance, cases of mycosis fungoides were found in which the blood-picture was that of leukæmia, and cases diagnosed as leukæmia were found in which nodules developed indistinguishable from those of mycosis fungoides. Similar nodules were also reported in cases of chloroma. Then it was realised that the green colour which seemed to make chloroma such a unique disease might be present only in the minority of the skull tumours or even in the glands or marrow of cases of leukæmia which had no tumours. Moreover, the exact clinical picture of chloroma might, as in the case about to be recorded, be present without any sign of the distinguishing green colour. As the number of reported cases increased it was found that almost every shade of green might be present, and it was pointed out that the same colour was commonly observed in pus—in the absence of the bacillus pyocyaneus—and in at least one case it was observed in the leucocytes centrifuged from the blood in a case of chloroma. Then hæmorrhage into the skin growths in cases of leukæmia was realised to be

by no means an uncommon occurrence, and Kaposi's multiple hæmorrhagic sarcoma came under suspicion, as did Mikulicz's disease when similar clinical features were found to be associated with cases of leukæmia. A consideration of as many of these anomalous cases as one could find records of seemed to warrant a more definite classification of them as clinical varieties of leukæmia, and the multiplicity of different inferences which would be drawn from any term already in use led to the adoption of the name nodular leukæmia.

Leukæmia: The disease.—The term leukæmia conveys to some people the conception of a perfectly definite disease or morbid process, to others it seems to denote a symptom which may perhaps be common to several such morbid processes. It is necessary to be clear on this point, for if it be held to be merely a symptom the conception of nodular leukæmia is quite valueless. Those who consider it a symptom usually approve the statement that the cells of a new growth may sometimes, as it were, dribble into the blood-stream to such an extent that they give rise to great alterations in the leucocyte count—up to 10, 20, or 30 times the normal. There are no cases, so far as I have been able to discover, in which the cells of a spindle-celled or melanotic sarcoma have been found in the blood-stream, and this absence of evidence in the case of easily recognisable cells is very striking and supports my belief that the cells of tissues other than those concerned in blood formation do not, as a matter of fact, gain access to the blood-stream. It is true that in various conditions cells may be found in the blood-stream that are not normally present. The blood-picture may even approach that of leukæmia in that there may be a certain proportion of myelocytes and unusual numbers of nucleated red cells. But in these cases the number of cells never approaches that seen in a typical case of leukæmia, the proportion of abnormal cells is seldom high, and there is a demonstrable cause for their presence. Such considerations lead on to the question of the difference between leucocytosis and leukæmia.

Leucocytosis and leukæmia.—As some cases of nodular leukæmia have been reported as sarcoma, and as sarcoma is not infrequently associated with a polymorphonuclear leucocytosis, it is important to mention the essential difference between leucocytosis and leukæmia, meaning by the latter the important sign of the disease of the same name. It must at the outset be recognised that a differentiation based wholly on the number of white corpuscles will sometimes fall to the ground. The only statement that we can make is that a leucocytosis of over 100,000 cells per cubic millimetre is extremely rare, whereas that number is commonly doubled or trebled in leukæmia. The essential difference resides in the nature of the cells. The characteristic of the cells in leukæmia is that the majority of them differ from those normally found in the blood. The small lymphocyte of lymphæmia is very different from that of the lymphocytosis of whooping-cough. In leucocytosis, on the other hand, there is excess of cells which are like those normally found—the variation is in numbers and not in kind. This, then, is a good working method of differentiating the two, but one must admit that it also falls short as an absolute criterion, for it is not uncommon in inflammatory leucocytosis to find a solitary myelocyte or even as many as 1 per cent. of these cells. This, however, may fairly be regarded as the exception which proves the rule, and is not likely to prove an obstacle in practice. There is one further point to which attention may be directed, and that is the presence in the blood-stream of white cells showing various stages of mitosis. So far as my experience goes, this is never to be found in leucocytosis and always present in leukæmia. This statement is made with all reserve, but it may be that we have here an absolute criterion; there are many points against the probability of its being so, but the question is worth investigation. I have found mitotic figures in a case of leukæmia when the total cell count was as low as 6000 per cubic millimetre. The points, then, which taken together differentiate leucocytosis and leukæmia are three—the number of the cells, the nature of the cells, and the presence or absence of mitosis. No one of them alone—except perhaps the last—is absolute, but taken together they should prove ample for all practical purposes.

The blood in leukæmia.—The condition of the blood in leukæmia needs a little further consideration. The symptom leukæmia (with a small "l") is the one on which we chiefly rely for the diagnosis of the disease Leukæmia (with a big "L"). By an examination of the blood we expect to be able not only to recognise that we are dealing with a case of leukæmia, but also to determine which variety of leukæmia we are dealing with. Very rarely, but still quite often enough, we are disappointed in these expectations. In some stages of the disease leukæmia, the symptom leukæmia is absent. In some cases it is present, but the variety is doubtful. To take the question of aleukæmic phases first, these may occur under the influence of treatment, or as a result of the onset of sepsis, or in the early stages of the disease when the blood-forming organs are affected, but the cells have not as yet overflowed into the circulation. The latter is, of course, a purely hypothetical explanation. We are not really in a position to explain this particular anomaly, but we must recognise that it occurs in very rare instances. It may in such cases be impossible to do more than suspect the nature of the disease. That the blood picture may not tell us for certain with which variety of leukæmia we are dealing is not very surprising when we remember that the blood picture is, in any given case, subject to wide variations. We do not know what the cause of leukæmia is, and, therefore, for the purposes of this paper it may be called an unknown stimulus. This stimulus has an effect on the blood-forming tissues leading to apparently purposeless overgrowth. The first sign in the blood of this over-activity is the appearance of cells which are not mature, cells of a sort that are normally only found in the marrow or glands. These cells can nevertheless be assigned with reasonable certainty to either the lymphatic or myeloid series. Later on, if the disease pursues its course without complications, the type of cell becomes more primitive, and increasing difficulty is experienced in saying to which series it belongs. If the stimulus is very forcible the primitive type of cell may be present from the beginning, and in an acute case we usually expect to find a very primitive type of cell—i.e., a cell that is not far removed from the so-called indifferent lymphoid cell from which both lymphocytes and myelocytes were originally derived. Much the same process may sometimes be seen in cases of cancer where, on the one hand, the appearances of the parent tissue may be exactly reproduced, or, on the other, a rapidly growing epithelioma may be composed of a mass of indifferent cells with difficulty distinguishable from those of a sarcoma. The same appearance of more primitive cells may also be seen in the response of the erythrocyte-forming marrow to various degrees of hæmolysis. It is therefore easily understood that the blood of a case of leukæmia may present a majority of cells which are, as far as our technique can determine, neither myelocytes nor lymphocytes, but some stage anterior to both. This it is that gives rise to difficulty in determining to what variety of leukæmia a given case should be referred.

Pathological anatomy of the nodules.—We can now pass to a consideration of the nodules themselves, and the first requirement is to place them, if possible, on an exact pathological basis. The most common sites for these nodules are the bones, especially those of the skull, the skin and subcutaneous tissues, and the various sites in which lymphoid tissue is found in appreciable amount during health. There have been several explanations of their appearance, and these seem to contemplate the possibility that in different positions they may have different modes of origin. That identical growths in the same patient may have different origins is not easy to credit, and for this reason alone some of the explanations offered of the appearance of these nodules excite suspicion at the outset. Of such explanations the most frequent concerns the presence of nodules on the surface of the bones of the skull. It is asserted that these are due to the passage of cells from the marrow through the bone to the periosteum. One observer claimed to have demonstrated in sections the continuity of the marrow and the periosteal growths. As in leukæmia, even the smallest vessels are commonly packed with cells, and as there are certainly vessels passing through the bone, we may surmise that it was some of these vessels that he succeeded in demonstrating. But better evidence against this theory is the occurrence of nodules on bones which do not contain marrow—e.g., the thin bones of the orbit, the flat surfaces of the scapula, &c. In these situations some other theory must be employed to explain their appearance. The presence of nodules in the intestine allowed of the explanation that

they were merely hypertrophies of pre-existing tissues—i.e., pre-existing lymphoid tissues. This is a very adequate explanation of these particular nodules and is not at all incompatible with the explanation already offered for those on the bones, but it takes one no nearer an explanation of those in the skin. Accordingly the suggestion was put forward that all these growths originated in hæmorrhages from the smaller vessels: this explanation would, of course, apply wherever the nodules were found. There are, however, certain points which make it very difficult to accept, the chief being that the growths do not resemble obvious hæmorrhages in similar tissues, having no blood pigment in their substance such as one would expect if there had been an escape of red cells from the vessels and such as is actually found in the obvious hæmorrhages. Moreover, the situation of the alleged hæmorrhages is peculiar, for apart from those which have given rise to macroscopic nodules there are other collections of cells which are visible under the microscope, and these are not distributed in the promiscuous fashion that one would expect if the hæmorrhage theory was the true explanation of the origin of these nodules. The microscopical collections of cells are best seen in the liver and are arranged as perivascular infiltrations—i.e., they form around the vessels sheaths of tissue exactly similar to that observed in the glands, marrow, and nodules. These sheaths are quite regular and very characteristic, and in the liver follow the distribution of Glisson's capsule, and are as regular round the bile-ducts as round the vessels. This last factor is very much against their being hæmorrhages. Lastly, it is not found during life that a hæmorrhage into the skin is followed by a nodule of growth, nor is a hæmorrhage in any other visible situation, such as the conjunctiva, although growths may arise in such situations when there has been no apparent preceding hæmorrhage. Putting aside, then, the hæmorrhage theory as untenable we may pass to other theories directed to explaining these nodules in whatever situation they may appear. The most acceptable is that which supposes that they arise from pre-existing lymphoid foci, and that such foci are, as a matter of fact, present in all parts of the body. In support of this theory we have the rapid origin of lymphoid tissue in various parts of the body in other conditions. About the edge of an advancing cancer, for instance, there is often a zone of round-cell infiltration which is absent in benign growths, and some suppose that this is in the nature of a defensive development of lymphoid tissue. It is paralleled by the appearance of lymphatic glands in large numbers in the lymphatic system near a malignant growth. These glands are certainly far more numerous than could be expected from the examination of the corresponding tissues in a healthy person. It is also asserted that in old persons in which the lymphoid tissues have undergone a large degree of physiological involution the growth of a cancer will cause their reappearance. There are many other diseases in which a round-celled infiltration is found and in which the suggestion that these cells have wandered out of the vessels does not accord with the general opinion that lymphocytes are not amœboid, nor with the universal experience that these wandering lymphocytes never collect in sufficient numbers to form an abscess as is the case with the polymorphonuclears. Against this theory is the fact that we are not in a position to be dogmatic about the statements just made, since they do not rest on a scientific basis sufficiently demonstrated to be generally acceptable at present. These, of course, are not arguments against the possible truth of this explanation. My inclination to accept this theory in its broad outlines is strengthened by two further considerations, of which the first is that the favourite sites for these perivascular infiltrations and for the smaller nodules growing from them are the liver and spleen—i.e., those organs which are known to be concerned with fœtal blood formation. The second is that in Leukæmia the thymus is very often greatly enlarged, even when the disease has commenced in adult life when the thymus should have been quite atrophic. The thymus in these cases often has the normal infantile shape, so that it cannot be explained by the supposition that the whole growth is due to some chance hæmorrhage into the remains of this organ. This resurrection of the thymus is even more notable in view of the fact that it also is an organ concerned with blood formation in the fœtus and to a less extent in early life. The writer certainly feels disposed to accept the theory that there are scattered about all parts of the body, except in the epiblastic tissues—i.e., epidermis, epithelium, and central nervous system—cells that may develop into lymphocytes and no doubt also into myelocytes, and that in leukæmia of sufficient intensity these cells take on the function of forming blood cells. In the commoner clinical variety only the adult blood-forming organs are affected; in a more advanced stage the organs which were concerned with blood formation in the fœtus and early life resume activity; in a still more advanced stage any such cells, wherever placed, may become active. It would seem that such cells are particularly frequent wherever there is fibrous tissue—e.g., in Glisson's capsule in the liver, in the periosteum, in the subcutaneous tissue, in the breast, &c. On the other hand, the nodules growing from such cells have never been discovered in purely epiblastic tissues, although they commonly grow from the fibrous tissue subjacent to epithelium and epidermis and from the dura mater, &c. With this provisional conception of how the nodules arise we can pass to a consideration of their clinical characteristics.

Distribution and characters of the nodules in Leukæmia.—I am inclined to think that the name "infiltrating Leukæmia" would perhaps be preferable to that at the head of this paper, for the nodules are by no means always so circumscribed as the term nodular implies. They vary from a diffuse œdematous condition to an almost bony hardness. The œdematous variety has been chiefly reported as affecting the head and neck. In one recorded case there was a diffuse greenish infiltration of the scalp, and in my own case the same was present. This is to be distinguished from the œdema which is common enough with tumours of any variety. The greenish colour of these infiltrations is not necessarily due to any pigment similar to that which has given rise to the name chloroma, but is probably due in part to bruising and in part to the greenish hue which œdema of anæmic tissue seems so often to cause. But apart from infiltrations there may also appear definite nodules of a fairly hard consistency—speaking for the moment of skin lesions only. These seem to have a considerable tendency to affect the face and body and are less frequent on the limbs. They vary a great deal in size and colour. In the case of Kreibich there were pendulous masses on the face described as being as big as the closed fist; on the other hand, they have in a great many cases been no larger than a pin's head, although in these there were usually some that reached a greater size. Their position is never in the epidermis itself, but this may be eroded by the subjacent growth and in such a case there will be an ulcerating surface. An ulcer may also occur where there is pruritus, but the latter is an infrequent symptom and ulceration is the exception. Sometimes the nodules are more deeply placed and the skin may be moveable over them, or both types may be present in the same case. They are, as a rule, multiple, but may be single or in very small numbers. If the view above mentioned of the manner of their origin be accepted it will at once be obvious how pleomorphic they must be, and the fact that they are so is further evidence in favour of that view. The cutaneous lesions differ in colour as much as in form. The colour may be that of the surrounding skin, as will usually be the case when the nodules are deeply placed; it may be yellow or red or purple. All intermediate shades are met with, and in addition there may be modifications due to hæmorrhages or to the development of the green colour of chloroma. Similar variations are met with in the skin nodules of Hodgkin's disease, but in both cases there seems to be a preponderance of cases in which a slate or grey colour is mentioned. There is no possibility of setting up any type of skin lesion that could be regarded as characteristic. It is also to be remembered that these lesions may start as little more than maculæ, may be accompanied by a diffuse erythema, and associated with a great variety of other lesions such as vesicles and pustules—whether these latter are to be regarded as secondary in all cases is yet to be determined. Purpura, although a very common skin lesion, hardly falls within the scope of this paper. Coming next to those lesions which are more deeply placed, we find that two situations are mentioned with a strange frequency—viz., the eyelids and the breast. As there is no tissue that is free from infiltration—i.e., no mesoblastic tissue—it is apparent that there is no limit to the variety of situations in which the deeper growths may arise. We may next take the nodules of the submucous surfaces, and these are especially apt to develop

where lymphoid tissue is abundant—i.e., in the alimentary tract. Minute nodules on the gums are so common in acute cases that they are important diagnostic points; so far as my experience shows they are usually about the size of a mustard seed, but flatter than this simile might suggest. They are well simulated by the particles of food which are apt to remain in the mouth in these cases; it is therefore necessary to make sure that any suspicious nodule cannot be brushed away with a piece of lint or wool. There may also occur a general enlargement of the gums even to the extent of hiding the teeth. This is, however, seldom if ever pure lymphoid growth. In some cases the tonsils have been enormously enlarged, and the same is true of the epiglottis. The lymphoid tissue at the back of the nose and at the base of the tongue is apt to be enlarged even before this is true of other structures. The stomach may be the seat of very extensive growth, as in a case recently seen by me in which this organ was enlarged to three or four times its normal size and was wholly occupied by confluent nodules of various sizes. The condition was not suspected during life as there were also symptoms of cerebral tumour, and the clinical picture was dominated by the latter. Permission was not obtained to examine the skull, but there can be little doubt that the symptoms of cerebral tumour were due to a lymphoid growth on the dura mater. Nodules in the intestine and adjacent glands have been responsible for a great deal of trouble; thus, in one case there was considerable pyrexia and a tumour in the abdomen of doubtful nature. The most favoured diagnosis was hepatic abscess, and laparotomy was accordingly performed. There was disclosed an enormous enlargement of the lymphatic glands. It is easy to be wise after the event, but it is also obviously to be regretted that leukæmia was not suspected as a possibility. The following extract is from an account of a case by Warthin: "At the operation—appendicitis had been diagnosed—a large cavity nearly surrounding the bladder was opened, filled with many ounces of clear, inodorous, urine-tinted fluid. By extending the incision a large mass of small intestine and omentum was found, in which was imbedded the greatly swollen appendix, which was removed, but only a small amount of the entangled bowel could be separated. The blood examination on the day of operation showed a leucocytosis of 90,000. No differential count was made at this time." That the symptoms of appendicitis should have been present in this case is not surprising considering the condition found at operation, and the leucocytosis although high was not sufficiently so to be incompatible with the diagnosis made. The condition found post mortem—namely, great enlargement of all the intestinal lymph nodes—the mucosa of the stomach was four times as thick as normal—led to further examination of the blood films, which showed only 1·6 per cent. of polymorphonuclear cells, the rest being mononulears of various sorts. These two cases are sufficiently illustrative of the clinical difficulties which may arise when the nodules of nodular leukæmia are best marked in the intestinal tract. There are many other cases in which similar changes have been found in less degree. We can pass now to a consideration of the bone nodules. Here there is a distinct partiality for those of the skull, for whatever bones are affected those of the skull are least likely to escape. It is particularly these cases which have given rise to the clinical conception of chloroma, but there are some cases in which the skull tumours have been absent but the green colour present in other parts of the body, and others in which there have been skull tumours but no green colour. In the majority the skull nodules have been the first to attract attention, but in some such symptoms as sciatica have been first complained of and have been found after death to be due to nodules on the pelvic bones. The bones most freely affected after those of the skull are the ribs. A sheath of lymphoid tissue round the long bones—e.g., the femur—has also been noted in a few cases. These bone nodules may give rise to a great infinity of symptoms, and it is only necessary to mention the most frequent. Of these exophthalmos takes the first place, and it may be so extreme as to lead to complete destruction of the eye. In one case the eye was removed before the diagnosis was arrived at—i.e., before the exact nature of the growth was appreciated. It seems probable that in this case removal would have been accomplished by nature even if the surgeon had not intervened. The exophthalmos may be present without any growth in the orbit, but as a rule it means that the walls of the orbit are affected. Another common symptom is facial paralysis, which may be bilateral. Deafness and symptoms suggestive of cerebral tumour are not uncommon, but the size to which intracranial nodules may attain without these symptoms is often very striking. A visible sign of cranial nodules is often seen in a thickening of the tissues in the temporal region, which may give rise to the diagnosis of mumps in the early stages and which sometimes produces a very marked appearance as if the face had been squashed between the temporal tumours. This appearance was very obvious in Essex Wynter's case, and is illustrated in his report of it. The bones of the face are not nearly so often affected as those of the cranium, but they only enjoy a partial immunity. The scalp is quite frequently affected—i.e., the underlying surface of the skull is the seat of tumours. These, as a rule, do not attain a great size, but may do so exceptionally. There is sometimes erosion of the bone by pressure of the growing marrow inside, but the nodules on the surface seem to lead to the opposite change, and they are usually found to be associated with the outgrowth of bony spicules from the surfaces affected. Among situations not yet mentioned specifically may be mentioned the vertebræ, where pressure on the spinal cord may produce paralysis, the lungs and pericardium, and the urethra. There are certain features which these nodules have in common no matter where they may be situated. Of these the most important is what may be described as their instability. The skin nodules in particular are apt to vanish entirely for a time and may be present only for a few days altogether. The writer has seen two cases in which it was said that there had been skin nodules present, but in neither were any to be seen at the time of his examination. This feature is well known, of course, in mycosis fungoides. The tumours in the skull seem less evanescent, but in one case at least they became very much smaller before death. We are not in a position to say why these nodules disappear, but we are in possession of a certain amount of information bearing on the point. In the first place it is well known that leukæmia uncomplicated by obvious nodules may show marked remissions apparently independent of treatment. In other cases these remissions seem to bear a very direct relation to treatment with arsenic, and more particularly with X rays. It is notable that the latter is of great value in other varieties of apparently causeless hypertrophy—e.g., cancer, goitre, &c.—with which leukæmia naturally falls into line. The other causative factor in remissions makes this analogy closer. It is the supervention of sepsis. As erysipelas will sometimes cure a rodent ulcer or Coley's fluid a cancer, so also does the onset of septicæmia not infrequently bring about an improvement in the symptoms of leukæmia. It is regrettable that this same sepsis is so often responsible for the immediate death of the patient, and it is probable that its effect on the leukæmic process has often led to difficulty in the interpretation of the post-mortem findings. It remains, then, a fact that the sudden disappearance of these nodules is not unusual, and is to some extent a diagnostic point. Another feature which all these nodules have is a predisposition to hæmorrhages—in the case about to be reported there was hardly a nodule found which was free from them. This no doubt depends on a certain looseness of structure which is usual in them. It may be mentioned here that some of these nodules may be much harder than others, and that this due to the large amount of fibrous tissue that they contain in some situations. This fibrosis is no doubt comparable to that seen in the spleen in ordinary cases of myelæmia—i.e., it is mainly of a supporting nature. (Dr. Ward then read the notes of a case of Nodular Leukæmia.)

Dr. H. D. ROLLESTON said he was especially interested in the subject, because some time ago he had described a case in which infiltration of the skin was very marked. He thought "infiltrative" a better term than "nodular" in these cases. They could be regarded as divisible into two types: (1) those which came under the observation of the dermatologist; and (2) those which came under the observation of the pathologist. The first group was very rare, and was probably commonly confused with lymphadenoma of the skin. With regard to the means of distinguishing them, he would like to raise the question of the importance of pruritus. The structures of the masses were very similar even histologically. Possibly pruritus occurred only in lymphadenoma. The second group, namely, those in which nodules occurred

in the viscera, was not so very rare. He could remember one case in which there were enormous thickening of the vermiform appendix and great enlargement of the glands on the posterior abdominal wall. These were accompanied by extensive lardaceous disease, for which there was no other cause obvious. He referred to a case in which large tumours were found in the liver and spleen.

Dr. F. PARKES WEBER referred first to cases of leukæmia in which skin signs were those which first attracted attention. Many years ago he had seen a case which by a portrait was typical of a form of mycosis fungoides known as lymphoderma perniciosa. This was regarded as distinct from ordinary cases of mycosis fungoides because it was associated with lymphatic leukæmia. The man had a lion-like facies, and his skin was thickened and thrown into folds. A section of the liver showed leukæmic infiltration. Such cases, he thought, were examples of leukæmia resembling mycosis fungoides, but they were very rare; and mycosis fungoides was certainly not generally leukæmia. Kaposi's "pigment sarcoma" had no resemblance to leukæmia histopathologically. There were very rare cases, such as that of Dr. Rolleston and Dr. Wilfrid Fox, in which nodules occurred in the skin. He would be interested to know if the leukæmic changes in the blood preceded their formation. He had not yet met with a definite case of leukæmic affection of the skin in which pruritus was mentioned as a prominent symptom, but had seen a case of lymphadenoma of the skin in which it was a very striking symptom, and a rash developed over the whole body. One sign commonly occurred first in the skin and led to the diagnosis of leukæmia being made—namely, hæmorrhage. This was far more common in *acute* leukæmia, but it was quite possible that it occurred in the early stages of the more chronic forms. He drew attention to the occurrence of local changes elsewhere. There were cases in which symptoms of acute Ménière's disease developed. He had shown one of the kind in 1900, and at the same meeting Dr. F. W. Mott had shown a similar one. Another symptom was long-continued priapism. In 1899 he had seen such a case where the diagnosis had been made a year before, because priapism had lasted for 18 days. There were certain cases in which both kidneys were enormously enlarged, and consisted of a mass of lymphocyte-like cells, in which the renal tubules were scattered. He thought that these cases were not generally associated with obvious leukæmic change in the blood. Would Dr. Ward regard them as localised leukæmia without blood changes or as lymphocytomata which might produce leukæmia by discharging their cells into the blood?

Dr. FREDERICK LANGMEAD recalled a case of acute leukæmia in a child, in which the blood changes were characteristic, and in which tumour-like masses as large as mulberries were seen projecting from the buccal mucosa, and also one from the tongue. He thought that such were extremely rare, especially in the latter situation. In a series of 12 cases in children, which he had reported in collaboration with Dr. J. Graham Forbes in 1908, there was no similar example. On the other hand, he suggested that acute leukæmia in children was not nearly so rare as was generally supposed, for 9 of the 12 cases were admitted to one hospital, the Hospital for Sick Children, Great Ormond-street, within three or four years, and constituted 0·75 per cent. of 1200 post-mortem examinations. He had learnt from Dr. Parkes Weber that the cases in which great enlargement of the kidneys occurred, of the type which he (Dr. Parkes Weber) had mentioned, might not be associated with leukæmic changes in the blood. He doubted whether such should be separated into a definite group. It was a very striking feature in several of those which Dr. Forbes and he had recorded, and was always accompanied by definite leukæmic changes in the blood.

Mr. T. P. BEDDOES thought that it was unfortunate that the term "nodular" had been employed, for in looking up the literature it might lead to this important paper being overlooked. He considered that mycosis fungoides was a totally different disease, and the same might be said of sarcomatosis of the skin and Kaposi's disease.

The PRESIDENT asked if the existence of a rash converted a case of leukæmia into one of the "nodular" variety. Was the red rash which had been mentioned in any way comparable to uræmic dermatitis? Would Dr. Ward include in his description every case in which leukæmic infiltration occurred in any part of the body?

Dr. WARD, in reply, said that he used the term to include only cases which were obviously nodular *clinically*. He had references to more than 50 cases, and in a short experience had seen two in which the skin was affected. He agreed that the diagnosis from lymphadenoma of the skin was very difficult, even at the hands of expert pathologists. He had references to two or three cases of leukæmia in which pruritus occurred. With regard to mycosis fungoides, he agreed that it was a distinct disease, but two writers had found that in 50 per cent. of cases of mycosis fungoides lymphocytosis occurred, and many of the recorded cases were obviously examples of leukæmia. Kaposi's disease also had certainly been confused with leukæmia. He had never seen a case in which he was convinced that lymphocytoma existed. He had not met with nodules in the tongue among his references, but believed that small nodules in the cheeks were very common. He did not wish to insist upon the term "nodular," but no other word appeared to express what he wished to convey.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Exhibition of Cases.—Mucous Gastritis in Infants.

A MEETING of this section was held on April 26th, Dr. G. A. SUTHERLAND, President of the section, being in the chair.

The following cases were shown:—

Mr. O. L. ADDISON: 1. Bony Growth on the Skull. The patient was a female aged 5 years. A swelling on the head was first noticed a fortnight after birth, and had gradually increased to the size of a pigeon's egg. It was on the frontal bone just to the right of the middle line and continued as a ridge, gradually decreasing in size, for 2 inches or more downwards and forwards to the temporal fossa. An X ray photograph showed that it consisted of cancellous bone. 2. Exostosis of the Inner End of the Clavicle. The patient was a female aged 11 years and 9 months. On the anterior surface of the inner end of the left clavicle was a bony swelling of the size of a horse-bean, recently noticed and increasing in size. An X ray photograph did not show the tumour, but a large cervical rib was well shown on the left side and a smaller one on the right.

Dr. J. D. ROLLESTON: Destruction of the Uvula in Vincent's Angina. The patient, a girl, aged 6 years, showed loss of uvula and anterior pillars, and a portion of the soft palate and tonsils. Free margin of soft palate presented a depressed pale area of scar tissue; voice nasal; no difficulty in swallowing. She was admitted to Grove Hospital on Jan. 31st, 1912, certified to be suffering from diphtheria on the seventh day of the disease. There was a deposit on the left tonsil. 8000 units of antitoxin were given. On Feb. 1st there was ulceration of the left tonsil and of the left side of the uvula. There were a few organisms resembling diphtheria bacilli in culture and numerous cocci. On the 4th the ulceration was more marked; Vincent's organisms in smear. In spite of various local measures successively adopted the ulceration advanced, and was accompanied by much fœtor, dysphagia, prostration, and insomnia. From Feb. 2nd to the 20th the temperature was always above 102° F., and on the 11th it was 105·2°. On the 14th the uvula was entirely destroyed. The larynx was not affected. On the 23rd local and general improvement occurred and cicatrisation rapidly took place. Vincent's organisms were still present in the throat smears on the 22nd, but none were found on March 2nd. The voice long remained very indistinct and nasal, but gradually it became clearer. From March 1st to the 9th there was some regurgitation, but none had been noticed since. Wassermann's reaction was positive on the 16th, but it became negative on the 30th, without anti-syphilitic treatment. There was no family or personal history of syphilis.

Dr. F. J. POYNTON: 1. A case of Morbus Cordis. The patient, a boy, aged 10 years, originally came to hospital on account of vague, aching pains "all over," with some shortness of breath on much exertion. There were no other symptoms or history of any kind. The heart was apparently displaced considerably to the right, the major portion of it lying to the right of the middle line. A systolic thrill and diastolic shock were palpable at the second right costal cartilage, and here, too, was heard a rather shortened first sound followed by a systolic murmur conducted up into the

neck. The second sound was accentuated and followed by a very faint diastolic murmur conducted down the sternum to the left. Skiagrams showed that the heart, though to the right, was not transposed, and that there was no material enlargement of the left ventricle. Opinion was very divided upon the nature of the lesion. 2. A Rachitic Dwarf, a boy, aged 11 years and 11 months. He walked at the age of 15 months and grew till 4 years of age, but was quite small for his age, and had not grown much since. Height 3 ft. 2 in. (should be 4 ft. 6 in.) and weight 3 st. 3 lb. (should be 5 st. 6 lb.). Cranial circumference, 20¼ in.; skull square, not bossed. Curves of long bones exaggerated; spade-like hands and feet; scoliosis; beaded ribs; keeled sternum; Harrison's sulcus; angulus Ludovici prominent; muscles very well developed.

Dr. D. FORSYTH: Gumma of the Lung. The patient was a boy, aged 10 years, one of several children, his birth being preceded by two miscarriages. A year ago he developed interstitial keratitis in both eyes, the left cornea becoming permanently damaged. A couple of months ago the keratitis recurred in the right eye. The boy was pigeon-breasted, with the following physical signs, suggesting a solid mass in the right chest. Right chest: lateral expansion defective, percussion note impaired in first space, dull at second rib down to fourth space; resonance began again under the fifth rib, whence to liver dulness at the seventh rib (nipple line) the note was resonant. Over the dull area the vesicular murmur as well as the vocal fremitus and vocal resonance were absent. Behind the note was impaired opposite the first dorsal spine, becoming duller at the second and resonant again at the fourth; the breath sounds from the first to the eighth spine were rather faint and high-pitched, though at the base they were heard better again; vocal fremitus was diminished and vocal resonance diminished and rather nasal on this side. The left lung and the heart were normal. As the X Ray photograph showed, the right chest contained, apparently about the hilum of the lung, a large, fairly sharply outlined mass occupying a position corresponding to the physical signs. This mass, though continuous with heart and aorta, did not pulsate nor in any way displace the heart. The Wassermann reaction was positive. Since coming under observation the boy had not lost weight, had had no cough and no sputum, but had run a slightly irregular temperature between 90° and 100° F.

Dr. E. CAUTLEY read a paper on Mucous Gastritis in Infants.

BALNEOLOGICAL AND CLIMATOLOGICAL SECTION.

The Radium Emanations of Mineral Waters.

A MEETING of this section was held on April 17th, Mr. G. H. THOMPSON, the President, being in the chair.

A discussion on the Radium Emanations of Mineral Waters was opened by Mr. T. PAGAN LOWE (Bath), whose paper appeared in THE LANCET of April 20th, p. 1051.

The PRESIDENT said that he had listened with very great interest to Mr. Lowe's remarks and pointed out that the subject of the discussion was of the greatest importance to the section. Balneology had by many been relegated to that nebulous atmosphere which bordered on the realms of quackery, but henceforth this department of medicine could claim a scientific basis for its practice. It was important to remember that the profession were at present merely on the threshold of inquiry with regard to radio-activity, and not to lose sight of the definitely medicinal properties of mineral waters, such as those of Bath and Buxton. The clinical results obtained by Buxton waters, which had a specific gravity of only 1010 and contained no salt of unusual potency, led one to the conclusion that there was some power in them, which was not represented by any solid chemical constituent in the ordinary sense, and the existence of radium emanations afforded a satisfactory explanation of their efficacy.

Mr. W. ARMSTRONG (Buxton) gave data arrived at after a three years' use of natural and strongly reinforced niton waters both in the laboratory and in the actual treatment of over 500 patients. He sketched the progress of niton through the system, pointing out the comparative merits of drinking, bathing, inhalation, local application, and hypodermic injection, and explained that niton, when taken by the mouth, leaves the body in about four hours, and when given by inhalation in about one hour. He mentioned exact observations showing that niton water therapy increased the activity of the various internal secretions and ferments, stimulated the excretion of carbon-dioxide by the lungs, of urea and butyric acid by the skin, and of uric acid by the kidneys, and laid stress on the greatly increased efficacy of niton, when oxygen was added, in inhalation and bathing, and electricity in the local applications of niton water or earth compresses. He testified to its value in gout, rheumatism, arthritis, neuritis, and in the various auto-intoxications. In high arterial tension the niton-oxygen baths gave exceptionally good results. In view of the rapid elimination of niton from the body he strongly advocated the repeated administration of niton water at intervals of three or four hours.

Dr. C. W. BUCKLEY (Buxton) discussed the effects of small doses of the emanation as given in the form of natural mineral waters, comparing these with the larger doses given in artificial solutions. He regarded the value of large doses as doubtful, whereas there was ample clinical evidence of the value of even the weaker radio-active mineral waters. He also pointed out that many of the methods advocated for radium-therapy involved the action of other potent elements, so that accurate deductions could not be drawn from such methods as to the action of radium. It was essential that the whole subject should be approached in a severely critical spirit if the truth was to be arrived at.

Dr. PRESTON KING (Bath) had very little doubt that in radio-activity they had the true explanation of the benefit in the treatment of disease by the Bath waters. Clinical experience had demonstrated the benefit for many years, but its cause had remained unknown till now.

Dr. R. ACKERLEY (Llandrindod Wells), whilst fully appreciating the able way Mr. Lowe had introduced the discussion, was not at all convinced that any of the good results achieved at Bath were due to radium emanations. What control experiments had there been? None had been mentioned. He presumed that in the treatment of patients attention was given to diet and general hygiene, and that baths, massage, &c., had been used. If so, why ascribe the improvement in the condition of patients to the fact that the water in use contained radium. Were the results of combined treatment any better when radio-active water was used than when indifferent waters were used? He hoped for information on this point, otherwise it appeared to him that what was said of radium now was much what was being said of the administration of lactic acid bacilli two years ago.

Dr. LL. J. LLEWELLYN (Bath) congratulated Mr. Lowe on his lucid and temperate paper. He deprecated Dr. Ackerley's somewhat acrid criticisms, and suggested that if he read the literature he would find that much scientific investigation had been conducted on radio-active water. Consideration of His's group of cases and Mandel's also had convinced him that in gout subjective improvement did not invariably run parallel to a decline in the uric acid content in the blood, nor for that matter with its excretion in the urine. He submitted, therefore, that the beneficial effect of radio-active water involved something more than the dissipation of uric acid in the blood and its excretion in the urine. It seemed possible therefore that the suggested capability of activating the body ferments which had been ascribed to radio-active water, might in some obscure way correct the particular warp in metabolism responsible for gout.

Dr. A. MANTLE (Harrogate) said it had been a matter of common knowledge for eight years that the old sulphur well at Harrogate was markedly radio-active, for Sir William Ramsay then reported upon it. They had not made capital out of it, for the action of radium upon metabolism was little known or understood, but possibly some of the good results of treatment, particularly of the mucous membranes, may be due to that fact. He would urge caution, however, in attributing too much to the knowledge that some spa waters are radio-active as an explanation of their action.

Dr. R. FORTESCUE FOX said that he had visited the factory at Kreuznach where radium bromide was extracted from the *sinter* or deposit from salt waters. For 200 years the evaporating waters had been used for inhalation, and the mud for compresses. Radio-activity must be regarded as one of the many physical and chemical properties of waters, and required patient and discriminating investigations.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

Benign Adenomatous Polyp of the Body of the Uterus.—Abdominal Section for Suppurative Puerperal Peritonitis.—Cases of Pregnancy with Complications.—Red Degeneration of Fibroids.

A MEETING of this society was held on April 19th, Dr. D. LLOYD ROBERTS (Vice-President) being in the chair.

Professor HENRY BRIGGS (Liverpool) read notes on the following:—1. Benign Adenomatous Polyp of the Body of the Uterus; Left Salpingitis; an Old Pyosalpinx. The patient, who was 51 years of age, had been married for 25 years. She had had several children, the youngest being 15 years of age. One abortion had occurred 21 years ago. The onset of the illness 15 years ago, four weeks after the last confinement, was described as inflammation of the bowels. For 15 years prolapse of the uterus was the main trouble, and a pessary was worn without discomfort until nine months ago when a persistent daily metrostaxis at the age of 51 first commenced. The physical signs were senile vaginitis, erosion of the cervix, old-standing prolapse, cystocele and rectocele, recent continuous uterine blood loss, and fixation of the uterus on the left side by an appendage swelling. Treatment consisted of vaginal hysterectomy with removal of the left tube. The following was the report on the specimen: The uterus was almost inappreciably enlarged, with an extensive glandular erosion on its cervix, and in its body a small adenomatous polyp, one-eighth by three-eighths of an inch, near the centre of the posterior wall. The left Fallopian tube, half an inch in diameter, removed along with the uterus, had thickened walls, and a dilated lumen due to old-standing salpingitis and enlargement of the folds of the mucosa. A benign adenoma of the body and a unilateral salpingitis were, said Professor Briggs, object-lessons in a woman at the age of 51 years, with a 15 years' history of pessary treatment of prolapse of the uterus. A chronic cervical erosion and a recent senile vaginitis did not simplify the diagnosis. Cultures on agar and blood serum from the Fallopian tubes consisted of a short, thick, Gram-positive bacillus mixed with a few Gram-positive diplococci.——2. Abdominal Section for Localised Suppurative Puerperal Peritonitis; Right Oöphoritis; Cellulitis; Slight Salpingitis. The patient, aged 21 years, who had been married 11 months, was the mother of one child. She had always been a delicate woman and menstruation had always been irregular, with severe pain and clots. Her pregnancy had been marked by hydrorrhœa, hyperemesis, and diarrhœa. A natural labour at full term took place on Feb. 17th, 1912. During the puerperium, on the third day, a rigor had occurred, with some uterine hæmorrhage and abdominal pain and vomiting. Later there were two other rigors. There had been headaches, high temperatures, and a sero-sanguineous discharge throughout. At the end of the eight weeks' puerperal fever and its wasting the pelvic and abdominal swellings on both sides of the uterus had increased, and there had been frequent clinical discussions as to whether the exudates were within the cellular tissue of the broad ligaments or in the uterine appendages. The abdominal distension and bilateral swellings pointed to peritonitis, as also did the attacks of sickness, and both the pelvic swellings were mainly in the posterior quadrants of the pelvis. The upper limits of each lateral swelling could be recognised above the pubes and Poupart's ligament on its own side, as in pelvic cellulitis. A culture on blood serum gave a Gram-positive bacillus. Abdominal section was performed on March 29th. Cultures from the Fallopian tubes were obtained on blood serum of a short Gram-positive bacillus giving an acid reaction in litmus media, forming gas in glucose and lactose and coagulating milk.——3. Abdominal Section for Suppurative Puerperal Peritonitis; Bilateral Cellulitis and Salpingo-Oöphoritis. The patient, aged 32 years, had been married nine years, and had had eight pregnancies. An abortion had occurred six years ago. The child was born eight weeks before the patient's admission to hospital. A rigor occurred on the fifth day after labour. Frequency of micturition followed, with acute pain during the act. After severe fever (103°–104° F.) for four or five weeks the temperature became normal, and it remained so with one exception (102·8°) one week after admission. Of the nine puerperal weeks 4–5 were febrile and 4–5 afebrile. There were bilateral hard swellings—one cellulitic, in front on the right side of the uterus, which was fixed, and the other salpingo-oöphoritic, behind and to the left side of the rectum. Abdominal section was carried out on March 8th. Cultures on blood serum from the left Fallopian tube consisted of a Gram-positive diplococcus.—Professor Briggs concluded with remarks on Lymphatic Pelvic Infection and a lantern demonstration on the distribution of the round cells.

Dr. J. E. GEMMELL (Liverpool) read a note on Three Cases of Pregnancy with Complications. The first case was one of left chronic inflammatory appendage disease, with adhesion to the pelvic floor and to the uterus, simulating a fibroid in the left cornu of the uterus, leading to fixation of the uterus, and previous abortions at 10–12 week. With the uterus pregnant, the adhesions were separated and the patient was well, with the pregnancy now advanced beyond the fourth month. The second case was one of pregnancy at the third month with signs and symptoms of peritoneal crises and internal hæmorrhage. Abdominal section disclosed a normal pregnancy and severe hæmorrhage from an intracapsular rupture of the spleen, without any history or sign of trauma. The spleen when removed was twice the size of the normal, with an extravasation of blood on its outer edge, subcapsular, and giving the appearance of a soft spongy growth. Microscopical sections had so far not exhibited any definite pathological change in the splenic tissue, but the histological investigation was not yet complete. Death took place in 48 hours, and at the post-mortem examination all the other abdominal viscera were found to be normal. In the third case, one of pregnancy at the sixth month, with a large appendicular abscess completely shut off from the general peritoneal cavity and filling the utero-vesical pouch, forming a broad cystic swelling in front of, and moving with, the uterus, incision and drainage were followed by premature labour and improvement for a few days, with subsequent uterine infection and death.

Dr. H. LEITH MURRAY (Liverpool) read a short paper on Red Degeneration of Fibroids, confirming a previous communication. The most thorough investigation by culture had proved three further specimens to be sterile both aerobically and anaerobically. A certain amount of thrombosis was present in all. This, however, had no relation to the hæmolysis, but appeared rather to be proportionate to the severity of clinical symptoms. The conclusions were drawn that the condition was not an infection, that the thrombosis was secondary to a lipoidal hæmolysis, that hæmolysis was going on in every necrobiotic fibroid, but that this might be masked by a rapid bleaching action which could readily be demonstrated *in vitro*, and that the degeneration did not necessarily produce typical or, in particular, acute clinical signs.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held on April 19th, Professor A. Bostock Hill, the President, occupying the chair.—Dr. J. A. Gibson, in opening a discussion on the Housing Regulations made under the Housing, Town Planning, &c., Act, 1909, dealt with the difficulties under which medical officers of health of rural districts laboured in carrying out the regulations as compared with those in the large towns. As few rural district councils had appointed special officers to carry out inspections, it followed that the work had to be done by the nuisance inspectors, who were faced with the difficulty of having to neglect their statutory duties or those under the regulations. It was not uncommon in rural districts to find a cottage which had been abandoned as a dwelling house but being used with safety as a store or workshop, and there appeared to be no reason why it should not be so used. In this connexion Dr. Gibson referred to the differing decisions of the English and the Scottish Local Government Boards. The English Board said that when once a local authority had closed a building it was not competent for the owner to do anything with it except to reconstruct it as a dwelling house. The Scottish Board had taken an entirely different view, and stated that if an owner, after a closing order had become operative, determined to put the condemned building to a different use the local authority had no power to prohibit such use of the building by demolishing it, unless it was a nuisance or injurious to the health of the public or of the inhabitants of the neighbouring dwelling-houses. The Scottish decision appeared to be the reasonable one. It seemed to be not only superfluous, but

unjustifiable, to demolish a building which, though absolutely unfit for human habitation, was quite fit for use as a store or in some other way. The medical officer of health of a rural district in the majority of instances was paid a salary which included his travelling and office expenses. As a consequence there was no uniformity of administration. One medical officer of health conscientiously spent a large portion of his salary in travelling over his district and in providing clerical assistance, while another provided neither, and was proportionally much richer. The regulations accentuated the need for security of tenure of office, for the small owner whose house the medical officer of health condemned had often many friends on the council who were quite ready to take up the cudgels against the officials who tried to carry out their duties conscientiously.—Professor H. R. Kenwood pointed out that one great obstacle to the accomplishment of the work under the regulations in rural districts was the fact that there were so many arrears to make up. For the problem of providing new cottages he considered there were two solutions. Either the workers in rural districts must receive higher wages or the State must give a subvention towards the cost of erecting houses. He was in favour of the latter course.—Mr. Herbert Jones was of opinion that to give a State subvention was economically wrong, for it meant in reality that the State paid a portion of the wages. He was convinced that in most districts if a labourer were offered a better house at a rental of 1*s.* a week more than he was paying he would manage to get the extra 1*s.* and the farmer would be willing to pay it in order to secure a more contented workman.—Dr. R. Dudfield referred to Sir Griffith Boscawen's Housing Bill, which provided for a grant of £500,000 to local authorities for building purposes. He did not consider, however, that the Bill would be acceptable.—Mr. F. E. Fremantle thought it would be impossible to get increased wages for the labourers, and held that a State subvention was justifiable.—Dr. J. S. Tew complained of the uncertain standard of habitability. He understood that the costs of an appeal in borderland cases was not great, but in certain circumstances it might be, so that the inability to incur the costs might prove an injustice to small property owners.—Dr. A. H. Bygott considered that it would not be possible to set a standard of habitability. He suggested that the insurance funds which would accumulate might be used for building cottages.—The President said that the one way to improve rural cottages was to educate the sanitary authorities, the landowners, and the tenants themselves.

HARVEIAN SOCIETY OF LONDON.—A meeting of this society was held on April 18th, Dr. H. J. Macevoy, the President, being in the chair.—Dr. Edmund Cautley read a paper on Fever in the New-born. He referred to babies in whom the cord had not separated suffering from a rise of temperature of definite duration. Inanition or thirst fever was due to mild sepsis arising from intestinal or renal irritation or nasal catarrh. Fever sometimes resulted from injury at birth ending in sepsis. Half the cases could be ascribed to sepsis, gastro-intestinal disturbance being symptomatic. The infection might be ante-natal, natal, or post-natal, the portal of entry being often difficult to ascertain. The cord and navel were the most frequent sites, leading to arteritis and phlebitis, the latter being almost always fatal. The signs of sepsis were variable; hæmorrhage after the second day was nearly always of septic origin. The prognosis was grave in the presence of anorexia, jaundice, and profound asthenia. Prolonged fever might be recovered from. Dry antiseptic dressings to the cord and navel should be used for prevention, and in treatment chloral should be given for spasms, brandy and saline injections for toxæmia, and mercury and bismuth for diarrhœa.—Mr. Arthur Edmunds read a paper on Intestinal Obstruction in Children. He said that diagnosis was difficult, and that children stood laparotomy badly, but the risks could be minimised by speed and warmth and by saline infusion and strychnine early in the course. Intestinal obstruction in children might depend on congenital defects which might be either incompatible with life or fatal unless relieved. Imperforate anus was an instance of the latter, and in this there was often a layer of peritoneum between the upper end of the anal canal and the lower end of the descending colon. Intestinal cysts sometimes caused obstruction, and might be treated by excision of the peritoneal wall or by resection of gut. Meckel's diverticulum was another cause, the tip becoming adherent to a gland and mesentery. Retro-peritoneal hernia was interesting; in left-sided duodenal hernia the sac should be incised above the transverse colon, the coils of bowel emptied, and reduction attempted. External hernia rarely caused obstruction in children, but all the causes met with in adults occurred in children, but beyond increased operative risk presented nothing of special interest.

Reviews and Notices of Books.

Milk and the Public Health. By W. G. SAVAGE, M.D. Lond., D.P.H. With numerous illustrations. London: Macmillan and Co. 1912. Pp. 450. Price 10*s.* net.

Dr. Savage is particularly well equipped as an author on this subject, having for many years conducted bacteriological researches in milk questions, and possessing the practical administrative experience of a medical officer of health both in a large borough and in a county with a considerable milk industry. He has also, as a public analyst, been conversant with the chemical questions related to the quality of milk and the prevention of adulteration. On nearly every branch of his subject, therefore, he has been able to add practical knowledge to the presentment of facts, and the conclusions to be drawn from them, and the volume before us is especially welcome from the fact that it brings together, in comparatively small compass, material derived from many sources often contained in official publications which are difficult to come by. The three parts of the book are: I. "The Bacteriology of Milk: Milk and Human Disease"—this includes epidemiological questions; II., "The Bacteriological Examination of Milk"; and III., an administrative part, "The Public Health Control of the Milk-supply," which deals with present English methods and proposed reforms.

In Part I. the sources of bacteria in milk are considered in order: intra-mammary; introduced during milking; from milk utensils or milking apparatus; from contamination in transit and on the premises of purveyor and consumer. In these matters Orr's work and that of various experimental stations in America are fully drawn upon. Dr. Savage refers to the allegation that milk separators add bacteria to the milk passing through them. There is some evidence that this increase, when it occurs, is due to the breaking down of the groups and clumps of bacteria which occur in the milk, with the result of yielding larger numbers of colonies and a germ content which thus appears to have increased, although in fact the contrary may have been the case. The causes of the fall in bacterial content which takes place at ordinary temperatures a few hours after milking are discussed; part is attributed to agglutination and other causes, and part to some action of a specific nature exerted by the milk, which is rather restraining than definitely germicidal. The rate of multiplication of different organisms in milk varies greatly, as was shown by the author in research work for the Local Government Board. Instances of ice-cream poisoning, as he reminds us, are perhaps due to the preservation of cream for several days at a low temperature, such treatment keeping the milk sweet, but favouring the development of species of bacteria that are at higher temperatures checked by the lactic organisms. In discussing thermal death points of pathogenic bacteria, special attention is given to the tubercle bacillus, and Dr. Savage points out that "if the American results are accepted a temperature of 60° C. maintained for 20 minutes is capable of killing all tubercle bacilli in milk, especially if the conditions preclude the formation of surface scum, while a much shorter exposure is sufficient if 65° C. or 70° C. is employed." The

results of the elaborate series of experiments made for the British Royal Commission of 1895 by Professor Sims Woodhead, however, suggest that a somewhat larger margin of safety should be allowed than is here indicated.

The epidemiological characters of outbreaks of acute infectious disease caused by milk are well set out, including the fact, which needs some explanation, that they are usually followed by very little secondary infection. It is noteworthy, says the author, that the part played by milk in the spread of scarlet fever and diphtheria was for a long time unrecognised and denied, and that it was not until notification of these diseases was uniformly enforced that the importance of milk as a vehicle of infection was admitted and proved. Dr. Savage suggests that a large number of outbreaks of sore-throat due to milk might be discovered if these and similar conditions were also notifiable. He gives an interesting collection of such outbreaks, and discusses their relation to mastitis of the cow. It seems probable that the ordinary type of bovine mastitis is non-virulent to man, but that in certain uncommon cases this condition is caused by streptococci which are highly pathogenic. Ulcerated teats have been shown to harbour diphtheria bacilli, probably as a superadded infection, and Dr. Savage inclines to a similar explanation of scarlet fever outbreaks which have been traced to particular cows. He thinks that the facts of the Hendon outbreak and similar outbreaks which have since been studied are not necessarily to be explained by the fact that the cow actually suffers from a bacterial invasion transmissible from cow to cow, resulting in the excretion of the scarlet fever organism in the milk. An alternative hypothesis is that there has been a local infection of the milk organs with bacilli of human origin, the cow acting as a passive carrier.

Tuberculosis is by far the most important disease of cows, and the disease of greatest concern from the view-point of the milk consumer. The chapters on tuberculosis are full and embody much material from the recent reports of the British Royal Commission and from official German and American sources. Tubercle bacilli, it has now been proved, may and do gain access to the milk of cows which clinically show no sign of udder tuberculosis or, indeed, of any form of tuberculosis. All the same, Dr. Savage rightly insists that extensive infection of milk with bacilli of tuberculosis is mainly from cows either marked "wasters" or suffering from tuberculous infection of the udder. As concerns human infection, much depends upon the dose; there is no source of tuberculous infection by which man can obtain a single dose of bacilli so enormous as that which may be supplied from a tuberculous udder. As regards cow to cow infection, the author lays stress on the evidence accumulated by the British Commission and others that the fæces of cows clinically tuberculous are highly infectious and more dangerous than matters discharged from the mouth or nostrils. Bang's method of elimination of tuberculosis from dairy herds is described, and its application at Birmingham specially dealt with, as are also the use of tuberculin tests and the results so far obtained by vaccination of cows with human tubercle bacilli.

Both the bacteriological and administrative sections of the volume are of much practical value. Dr. Savage deals with the conditions of cowsheds which cause pollution and infection, and the deficiencies of the milk regulations and other powers possessed by sanitary authorities in regard to them. The provisions of various Acts relating to milk are enumerated, and in an appendix the tuberculosis clauses of the Manchester Act, the Milk and Dairies Bill introduced in 1909 by Mr. Burns, and the Board of Agriculture's contingent Order under the Diseases of Animals Acts are given. Dr. Savage comes to the conclusion that the special powers obtained by the authorities of certain cities to test milk for tubercle bacilli and to follow the infection back into the country districts have not effected a marked reduction in the amount of tuberculous milk imported into the cities in question and are open to serious administrative objections. He strongly condemns the practice of "wet milking," and urges that satisfactory cleanliness in milking depends upon education of those concerned in such a way that they automatically follow a prescribed ritual. This contention appears particularly important; it is only when the milker is provided with necessary facilities, and has fallen into a habit that he does not think of breaking, that he can be expected to observe cleanly conditions when without supervision in the early hours of a cold winter's morning.

In discussing the delivery of milk the author points out that while bottles are undoubtedly better for special purposes, such as for milk delivered from a milk depôt or for certified milk, it is doubtful whether they have any decided advantage over cans for ordinary milk delivery work. The statement that milk containers of prepared paper or pulp do not appear to have made any headway should perhaps be qualified by a reference to their increasing use in the cream trade, in which they have proved very satisfactory.

The examples which we have given of the subjects dealt with in this volume illustrate its wide range and thoroughness, and we congratulate Dr. Savage on the success with which he has dealt with this many-sided subject.

Die äussere und innere Sekretion des gesunden und kranken Organismus im Lichte der "Vitalen Farbung." Teil I. Separat-Abdruck from *Beiträge zur klinischen Chirurgie.* Band LXIV. 1909.

Studien zur Biologie der bösartigen Neubildungen. Tübingen: H. Laupp. 1911.

Neue Untersuchungen über die äussere und innere Sekretion des gesunden und kranken Organismus. Tübingen: H. Laupp. 1912.

By Professor Dr. EDWIN E. GOLDMANN, of Freiburg.

THESE three memoirs give a full account of a very remarkable series of researches in which Professor Goldmann, of Freiburg, has been engaged during the past few years. The work is an outcome of Ehrlich's studies on dyes, and resulted in the discovery that certain dyes can be injected into animals without producing any injury, when the tissues become infiltrated with the stain. Subsequently when the animals are killed, and histological sections are prepared, it is found that the pigment is retained in certain kinds of cells only, so that differential staining is accomplished by this intra-vitam method.

This ability to incorporate in their protoplasm a substance foreign to the body is not a mere accident, leading to the preparation of merely pretty sections, but it can be used as an index of the power of certain cells with granular protoplasm to deal in a similar way with materials such as glycogen, fat, and iron, which are normal body constituents. Not the least interesting of Professor Goldmann's results are those he has obtained from his study of the placenta. When pregnancy occurs the blue colour disappears from the skin (where normally it accumulates, partly in the granules of the fixed connective tissue corpuscles, but chiefly in the free round cells of the subcutaneous region) and from the histogenetic migratory cells which are found in every organ, the nervous system alone excepted, and accumulates in the placenta, the ovum itself, however, showing no trace of blue staining. The placental cells, which in this way form a barrier between the maternal and fœtal tissues, are the same cells which also act as the storehouse for glycogen and fat. Claude Bernard taught that the placenta is an organ which produces the material needed for the nutrition of the embryo; but in the light of Professor Goldmann's researches we learn that these nutrient materials are really attracted from the maternal blood by the placental

cells, where they are temporarily incorporated before entering the fœtal circulation.

The investigation, however, has not been confined to the normal animal, and interesting results have already been obtained in relation to pathological processes. Thus it has been found in the inoculation of mice with tubercle bacilli intraperitoneally that differences obtain in the mode of the spread of the disease, according as the bacilli are of bovine or avian origin. The special reason why mice and rats have been hitherto employed in the work is because it was hoped that some light would be thrown upon the malignant growths to which such animals are peculiarly susceptible. In this condition the aggregations of blue-stained macrophages around the growth assume extraordinary dimensions; this is regarded as a specific local reaction produced by the tumour cell. If such a tumour occurs in a pregnant animal, there is a race between the macrophages around the tumours and the similar cells in the placenta to obtain possession of the blue dye; and in most cases the placenta is victorious, whereas the tumour atrophies or remains stationary. We need hardly point out the importance of this observation, for it led next to the inquiry whether in the non-pregnant animal there is any organ analogous in function which will inhibit or delay the transmission of substances needed for the growth of the cancer cell. Professor Goldmann has already some evidence that the liver will act in this way, and although this branch of the inquiry is at present in its infancy, it must be regarded as likely to yield important results.

It is not necessary, however, for us in this place to attempt to summarise any more of the conclusions arrived at, for in the present issue of THE LANCET we have the opportunity of publishing a paper by Professor Goldmann himself, in which he lays before our readers the principal features of his work. We only hope that this paper will induce those interested in the subject to study the books the titles of which stand at the head of this review. Those on the External and Internal Secretions of the Healthy and Morbid Organism in the Light of "Vital Staining," and dated 1909 and 1912, are in sequence. The 1911 publication (which originally appeared in *Beiträge zur Klinischen Chirurgie*, Vol. LXXII.) deals with the question of New Growths. All are abundantly illustrated with beautiful drawings of the author's histological preparations, and are provided with an excellent bibliography. The only stain referred to in Professor Goldmann's paper which we publish to-day, is the one named isamine blue, and this is the one with which the best results have been obtained. But other related dyes have been employed, and those interested in the chemical structure of these pigments will find full details in his more extended publications.

We can only, in conclusion, express our congratulations to the author on the results he has hitherto obtained, and our hope that he will continue what has begun so well. We note that the expenses of the work have been borne by Sir Julius Wernher and Mr. Otto Beit, and it must be a matter of gratification to these generous donors to know that their money has been so profitably spent.

Medical Laboratory Methods and Tests. By HERBERT FRENCH, M.A., M.D. Oxon., F.R.C.P. Lond., Assistant Physician, Guy's Hospital, &c. Third edition. London: Baillière, Tindall, and Cox. 1912. Pp. 202. Price 5*s.* net.

LABORATORY methods now play so important a part in diagnosis that a definite knowledge of their nature and application is an essential in practice. A small book convenient for reference and yet with sufficient detail to allow the methods and tests to be carried out practically with its aid is therefore likely to be of great assistance to the practitioner. Dr. French's little book fulfils these conditions, and we welcome the third edition thereof as an evidence of its popularity and usefulness. It deals with the examination of the urine, blood, sputum, pus, gastric contents, and fæces. Chapters are also devoted to microscopical examination in affections of the skin, to the examination of serous exudations, cerebro-spinal and cystic fluids, and to the preservation and staining of morbid anatomy specimens. The examination of seminal fluids is described and the tests for the commoner poisons are given. The present edition contains descriptions of new tests and of modifications of the old ones. It is a handbook which should prove useful both to the student and the practitioner.

A Handbook of the Diseases of the Eye, and Their Treatment. By Sir HENRY R. SWANZY, A.M., M.D. Dub., D.Sc. Sheff., and LOUIS WERNER, M.B. Dub., F.R.C.S. Irel., Sen. Mod. Univ. Dub. London: H. K. Lewis. 1912. Pp. 634. Price 12*s.* 6*d.* net.

Swanzy's Handbook of the Diseases of the Eye has been re-cast in the new edition, and a good book has thereby been made better. Instead of plunging directly into optics as heretofore, it opens with a preliminary chapter on what is commonly called physiological optics—accommodation, convergence, visual sensations, the field of vision, and so on. A chapter on the ophthalmoscope follows, and then diseases of the eye are discussed in the usual anatomical classification. Optics and errors of refraction are relegated to a late stage, to be followed by muscular anomalies and diseases of the adnexa bulbi. The sequence is commendable, yet not i[n] our opinion wholly satisfactory. It is impossible to us[e] ophthalmoscope intelligently without understandin[g] physical laws of optics, and these are too scantily [dealt] in the early sections. On the other hand, we cordi[ally] with the principle of relegating the correction o[f] refraction to a late stage in the ophthalmologica[l] The text has been thoroughly revised: much new [matter] been incorporated without materially adding to th[e] the text, space being afforded by the elimination o[f] material. Twenty-one coloured figures have bee[n] from admirable originals painted by one of the auth[ors] Louis Werner. We miss the chapter on the pupil, and not been able to find that all the important facts contai[ned] in it have been introduced elsewhere.

We think that the authors are to be congratulated upon the bold course they have adopted. Many good manuals are spoiled in later editions by the gluttonous incorporation of undigested new matter. Some of the more recent editions of this book showed signs of this tendency, but the authors have now realised the fact and have taken the necessary steps to obviate it.

Modern Surgical Technique in its Relations to Operation and Wound Treatment. By C. YELVERTON PEARSON, M.D., M.Ch. R.U.I., F.R.C.S. Eng., Professor of Surgery, University College, Cork, &c. Illustrated with two coloured and other plates, and 129 illustrations in the text. Second edition, revised and enlarged. London: John Bale, Sons, and Danielsson, Limited. 1911. Pp. 484. Price 10*s.* 6*d.* net.

WE were able to speak in very favourable terms of the first edition of this book, and we are pleased to see that a second edition has been called for. The reason for its success is not far to seek; for it gives a full account of the mode of carrying out the principles of modern surgical practice; and this is what many need to know.

The work consists of four parts; in the first the author deals with preliminary considerations, and there is a short introduction on the surgery of the past, and on the main

principles of the surgery of the present. A chapter on surgical bacteriology follows, and then come chapters on infection and disinfectants. A new chapter has been added to this volume on the standardisation of disinfectants. This is always a difficult subject, and we are glad to see that the author has thought it well to make frequent reference to THE LANCET Commission on the Standardisation of Disinfectants.

The second part of the book treats of the preparation of the surgeon's hands, instruments, and dressings. With regard to the use of gloves, Professor Pearson says that when his hands are in good cosmetic condition he does not use gloves, but if his hands are rough or scratched, or if he has been engaged in outdoor recreations he uses gloves for all operations. In septic cases he wears fairly thick heavy gloves for the purpose of protecting his own hands from infection.

The third part treats of wound technique and this includes the arrest of hæmorrhage, suture needles, and sutures. The last part deals with operative technique, and in it are discussed such questions as the choice of position of incisions, and the best methods of closing the wound. The after-treatment is described, and two valuable chapters follow. In one the very important matter of operations in private houses is discussed, and in the other the practice of asepsis in general practice is described.

This is a very useful book, and the wide experience of the author enables him to write with authority.

...nosis: A Text-book of Clinical Microscopy and ...emistry for Medical Students, Laboratory ... Practitioners of Medicine. By CHARLES ...SON, A.B., M.D., Professor of Medicine, ...ty School of Medicine. Third edition. ...adelphia: J. B. Lippincott Company. ...ls.

...ew years many text-books on clinical ...ared, but Dr. Emerson states in his ...it may seem a thankless undertaking to ... number, yet he has attempted to cover ..., a different way. He has endeavoured to ... laboratory work from the clinical, rather ... laboratory, point of view; and lays stress on ...ant fact that the results obtained in laboratories ...dom conclusive, but must be interpreted in the light of the ward findings. That his efforts have been successful is confirmed by the fact that although the first edition only appeared in 1906, a third has been called for. The changes which have taken place during those five years have been extensive and significant, and so much has had to be added or altered that the present volume is in a large measure a new book. A text-book should include only those contributions the value of which is reasonably certain and only those methods which have been well tested. Notwithstanding that these principles have been carefully followed the book is a large one, and we believe it will be found too involved for students but most useful for those working in laboratories. In general practice, also, many of the methods described will be found impracticable owing to the numerous reagents or complicated apparatus required, which can only be met with in well-appointed laboratories. Considering the book from the point of view of the laboratory worker whose duty it is to collaborate with physician and surgeon in their clinical routine, Dr. Emerson's descriptions and suggestions will be found of considerable value. He has carried out his labours with great thoroughness, never forgetting the essentially practical side of his subject.

Among the best chapters in the book is the one on the examination of the blood. The technique of the various processes required is clearly indicated, and the conclusions to be drawn from the results are well set forth. The completeness with which this subject is studied is shown by the fact that no less than 244 pages are devoted to it. The changes in the blood in certain diseases, such as anæmia and leukæmia, are fully discussed; the appearances of, and methods of examining for, the characteristic parasites in malaria, trypanosomiasis, piroplasmosis, filariasis, and relapsing fever are also detailed at length. The methods of estimating the opsonic index and testing for the Wassermann reaction are also clearly described.

The work is beautifully illustrated, the coloured plates being particularly well executed.

MISCELLANEOUS VOLUMES.

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cells, where they are temporarily incorporated before entering the fœtal circulation.

The investigation, however, has not been confined to the normal animal, and interesting results have already been obtained in relation to pathological processes. Thus it has been found in the inoculation of mice with tubercle bacilli intraperitoneally that differences obtain in the mode of the spread of the disease, according as the bacilli are of bovine or avian origin. The special reason why mice and rats have been hitherto employed in the work is because it was hoped that some light would be thrown upon the malignant growths to which such animals are peculiarly susceptible. In this condition the aggregations of blue-stained macrophages around the growth assume extraordinary dimensions; this is regarded as a specific local reaction produced by the tumour cell. If such a tumour occurs in a pregnant animal, there is a race between the macrophages around the tumours and the similar cells in the placenta to obtain possession of the blue dye; and in most cases the placenta is victorious, whereas the tumour atrophies or remains stationary. We need hardly point out the importance of this observation, for it led next to the inquiry whether in the non-pregnant animal there is any organ analogous in function which will inhibit or delay the transmission of substances needed for the growth of the cancer cell. Professor Goldmann has already some evidence that the liver will act in this way, and although this branch of the inquiry is at present in its infancy, it must be regarded as likely to yield important results.

It is not necessary, however, for us in this place to attempt to summarise any more of the conclusions arrived at, for in the present issue of THE LANCET we have the opportunity of publishing a paper by Professor Goldmann himself, in which he lays before our readers the principal features of his work. We only hope that this paper will induce those interested in the subject to study the books the titles of which stand at the head of this review. Those on the External and Internal Secretions of the Healthy and Morbid Organism in the Light of "Vital Staining," and dated 1909 and 1912, are in sequence. The 1911 publication (which originally appeared in *Beiträge zur Klinischen Chirurgie*, Vol. LXXII.) deals with the question of New Growths. All are abundantly illustrated with beautiful drawings of the author's histological preparations, and are provided with an excellent bibliography. The only stain referred to in Professor Goldmann's paper which we publish to-day, is the one named isamine blue, and this is the one with which the best results have been obtained. But other related dyes have been employed, and those interested in the chemical structure of these pigments will find full details in his more extended publications.

We can only, in conclusion, express our congratulations to the author on the results he has hitherto obtained, and our hope that he will continue what has begun so well. We note that the expenses of the work have been borne by Sir Julius Wernher and Mr. Otto Beit, and it must be a matter of gratification to these generous donors to know that their money has been so profitably spent.

Medical Laboratory Methods and Tests. By HERBERT FRENCH, M.A., M.D. Oxon., F.R.C.P. Lond., Assistant Physician, Guy's Hospital, &c. Third edition. London: Baillière, Tindall, and Cox. 1912. Pp. 202. Price 5*s.* net.

LABORATORY methods now play so important a part in diagnosis that a definite knowledge of their nature and application is an essential in practice. A small book convenient for reference and yet with sufficient detail to allow the methods and tests to be carried out practically with its aid is therefore likely to be of great assistance to the practitioner. Dr. French's little book fulfils these conditions, and we welcome the third edition thereof as an evidence of its popularity and usefulness. It deals with the examination of the urine, blood, sputum, pus, gastric contents, and fæces. Chapters are also devoted to microscopical examination in affections of the skin, to the examination of serous exudations, cerebro-spinal and cystic fluids, and to the preservation and staining of morbid anatomy specimens. The examination of seminal fluids is described and the tests for the commoner poisons are given. The present edition contains descriptions of new tests and of modifications of the old ones. It is a handbook which should prove useful both to the student and the practitioner.

A Handbook of the Diseases of the Eye, and Their Treatment. By Sir HENRY R. SWANZY, A.M., M.D. Dub., D.Sc. Sheff., and LOUIS WERNER, M.B. Dub., F.R.C.S. Irel., Sen. Mod. Univ. Dub. London: H. K. Lewis. 1912. Pp. 634. Price 12*s.* 6*d.* net.

Swanzy's Handbook of the Diseases of the Eye has been re-cast in the new edition, and a good book has thereby been made better. Instead of plunging directly into optics as heretofore, it opens with a preliminary chapter on what is commonly called physiological optics—accommodation, convergence, visual sensations, the field of vision, and so on. A chapter on the ophthalmoscope follows, and then diseases of the eye are discussed in the usual anatomical classification. Optics and errors of refraction are relegated to a late stage, to be followed by muscular anomalies and diseases of the adnexa bulbi. The sequence is commendable, yet not in our opinion wholly satisfactory. It is impossible to use the ophthalmoscope intelligently without understanding the physical laws of optics, and these are too scantily discussed in the early sections. On the other hand, we cordially agree with the principle of relegating the correction of errors of refraction to a late stage in the ophthalmological syllabus. The text has been thoroughly revised: much new matter has been incorporated without materially adding to the length of the text, space being afforded by the elimination of obsolete material. Twenty-one coloured figures have been added from admirable originals painted by one of the authors, Dr. Louis Werner. We miss the chapter on the pupil, and have not been able to find that all the important facts contained in it have been introduced elsewhere.

We think that the authors are to be congratulated upon the bold course they have adopted. Many good manuals are spoiled in later editions by the gluttonous incorporation of undigested new matter. Some of the more recent editions of this book showed signs of this tendency, but the authors have now realised the fact and have taken the necessary steps to obviate it.

Modern Surgical Technique in its Relations to Operation and Wound Treatment. By C. YELVERTON PEARSON, M.D., M.Ch. R.U.I., F.R.C.S. Eng., Professor of Surgery, University College, Cork, &c. Illustrated with two coloured and other plates, and 129 illustrations in the text. Second edition, revised and enlarged. London: John Bale, Sons, and Danielsson, Limited. 1911. Pp. 484. Price 10*s.* 6*d.* net.

WE were able to speak in very favourable terms of the first edition of this book, and we are pleased to see that a second edition has been called for. The reason for its success is not far to seek; for it gives a full account of the mode of carrying out the principles of modern surgical practice; and this is what many need to know.

The work consists of four parts; in the first the author deals with preliminary considerations, and there is a short introduction on the surgery of the past, and on the main

principles of the surgery of the present. A chapter on surgical bacteriology follows, and then come chapters on infection and disinfectants. A new chapter has been added to this volume on the standardisation of disinfectants. This is always a difficult subject, and we are glad to see that the author has thought it well to make frequent reference to THE LANCET Commission on the Standardisation of Disinfectants.

The second part of the book treats of the preparation of the surgeon's hands, instruments, and dressings. With regard to the use of gloves, Professor Pearson says that when his hands are in good cosmetic condition he does not use gloves, but if his hands are rough or scratched, or if he has been engaged in outdoor recreations he uses gloves for all operations. In septic cases he wears fairly thick heavy gloves for the purpose of protecting his own hands from infection.

The third part treats of wound technique and this includes the arrest of hæmorrhage, suture needles, and sutures. The last part deals with operative technique, and in it are discussed such questions as the choice of position of incisions, and the best methods of closing the wound. The after-treatment is described, and two valuable chapters follow. In one the very important matter of operations in private houses is discussed, and in the other the practice of asepsis in general practice is described.

This is a very useful book, and the wide experience of the author enables him to write with authority.

Clinical Diagnosis: A Text-book of Clinical Microscopy and Clinical Chemistry for Medical Students, Laboratory Workers, and Practitioners of Medicine. By CHARLES PHILLIPS EMERSON, A.B., M.D., Professor of Medicine, Indiana University School of Medicine. Third edition. London and Philadelphia: J. B. Lippincott Company. Pp. 724. Price 21*s.*

DURING the past few years many text-books on clinical diagnosis have appeared, but Dr. Emerson states in his preface that though it may seem a thankless undertaking to add another to their number, yet he has attempted to cover the same ground in a different way. He has endeavoured to consider clinical laboratory work from the clinical, rather than from the laboratory, point of view; and lays stress on the important fact that the results obtained in laboratories are seldom conclusive, but must be interpreted in the light of the ward findings. That his efforts have been successful is confirmed by the fact that although the first edition only appeared in 1906, a third has been called for. The changes which have taken place during those five years have been extensive and significant, and so much has had to be added or altered that the present volume is in a large measure a new book. A text-book should include only those contributions the value of which is reasonably certain and only those methods which have been well tested. Notwithstanding that these principles have been carefully followed the book is a large one, and we believe it will be found too involved for students but most useful for those working in laboratories. In general practice, also, many of the methods described will be found impracticable owing to the numerous reagents or complicated apparatus required, which can only be met with in well-appointed laboratories. Considering the book from the point of view of the laboratory worker whose duty it is to collaborate with physician and surgeon in their clinical routine, Dr. Emerson's descriptions and suggestions will be found of considerable value. He has carried out his labours with great thoroughness, never forgetting the essentially practical side of his subject.

Among the best chapters in the book is the one on the examination of the blood. The technique of the various processes required is clearly indicated, and the conclusions to be drawn from the results are well set forth. The completeness with which this subject is studied is shown by the fact that no less than 244 pages are devoted to it. The changes in the blood in certain diseases, such as anæmia and leukæmia, are fully discussed; the appearances of, and methods of examining for, the characteristic parasites in malaria, trypanosomiasis, piroplasmosis, filariasis, and relapsing fever are also detailed at length. The methods of estimating the opsonic index and testing for the Wassermann reaction are also clearly described.

The work is beautifully illustrated, the coloured plates being particularly well executed.

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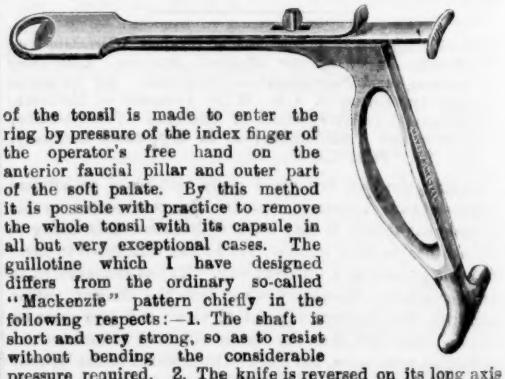
with asphyxia; (6) polycythæmia; (7) hæmoptysis in engorgement of the right ventricle; (8) aneurysm (to relieve pain); (9) all cases of dilatation of the right ventricle; and (10) pneumonia with pain and engorgement of right ventricle. Dr. R. G. Hebb discusses "some kidneys," and emphasises the teaching that "the real large white kidney is not only very rare but could not contract if it wanted to"; that "the small white kidney is the ultimate phase of an acute nephritis, the intermediate stages being represented by the different kinds and sizes of the mottled kidney"; and draws the inference that "there remains a golden opportunity for someone to show the relation between the clinical phenomena and the actual condition of the kidneys." After the report of the department of bacterio-therapeutics, Dr. D. W. Carmalt-Jones gives some interesting observations on the use of calcium salts, not only in hæmorrhages but in "serous hæmorrhage," or effusion, into the skin, kidney tubules, bowels, and joints, and in headaches in those with deficient blood coagulability; and *per contra* of the use of citric acid in conditions likely to be benefited by a more fluid blood. Dr. J. A. Braxton Hicks reports a case of polycythæmia, with an estimation of the blood volume, and also describes the technique of two modifications of Wassermann's reaction devised respectively by Dr. Flemming and Dr. W. d'Este Emery.——Of the 40 papers included in the *Transactions of the American Surgical Association*, Vol. XXVIII. (for sale by W. J. Dorner, Philadelphia. Pp. 664. Edited by ARCHIBALD MACLAREN, M.D.), which were read at the annual meeting of the association in May, 1910, there are many of no small importance. Perhaps the three most striking papers are those dealing with operations on the pituitary gland, or, as they prefer to call it in America, the hypophysis. The first of these was read by Professor von Eiselberg, who described the six cases in which he had operated. In three of these cases, in which the operation was performed for hypopituarism, all the patients recovered; two cases of acromegaly both died; in another case the two conditions were combined, and this patient was much improved by the operation. Dr. A. E. Halstead, of Chicago, reported two cases operated on by the naso-oral method, one of which recovered and the other died; and Dr. S. J. Mixter and Dr. A. Quackenboss reported a case of tumour of the hypophysis with infantilism, in which they had operated with success. Both the nasal and the oro-nasal routes were employed, but the intracranial operation was not performed, and it is clear that it is definitely more difficult. During the discussion on these papers an interesting investigation was reported on the normal measurements of the site of the gland, in order that its position may be more easily found during operation. This investigation had been undertaken by Professor Ransom, of the Northwestern University Medical School. Dr. J. M. T. Finney read a paper on a case of resection of the pancreas for tumour. The greater part of the pancreas was excised, leaving only a small portion of the head and tail. The patient was a woman 43 years old, and she recovered from the operation. There are many other papers in the volume which will repay perusal. By the way, one surgeon mentions that he recommended X rays for superficial epitheliomata in 1894; it is difficult to see how this could be.——The *Report* of Dr. J. RUTHERFORD, C.M.G., F.R.C.S., Veterinary Director-General and Live Stock Commissioner, Department of Agriculture, Canada, for the year ending March 31st, 1910 (Ottawa: Government Printing Office. 1911), on the prevalence of contagious disease in Canada, shows that the department of which he is the head is doing excellent work. Glanders and maladie du coit, which if once allowed to get out of control become disastrous, are being kept within measurable bounds; and mange, both in horses and cattle, is steadily decreasing under the policy of close supervision and notification now enforced. Sheep scab is now completely eradicated from Canadian sheep, and so much confidence have the United States veterinary authorities in the work done by their Canadian *confrères* in this direction that they have excepted sheep brought from Canada from the usual 30 days' quarantine restrictions. A severe and extensive outbreak of rabies in the Province of Ontario was controlled only by strict application and enforcement of drastic measures. A series of interesting reports on special subjects is given by the veterinary officials who have devoted themselves to special work, and all who are interested in the diseases of Canadian live-stock should certainly obtain a copy of this report.

New Inventions.

GUILLOTINE FOR TONSIL ENUCLEATION.

THE guillotine here illustrated has been designed in order to facilitate complete removal of the tonsils by the method first described by Dr. Greenfield Sluder of St. Louis.[1] The chief features of this method are the following:—1. The upper or distal surface of the ring of the guillotine is applied over the tonsil, instead of the lower or proximal surface of the ring, as in the ordinary method. 2. The tonsil is drawn by the ring forcibly upward and forward until it lies over a swelling on the lower jaw corresponding to the socket of the last molar tooth and known as the "eminentia alveolaris." This prominence is thus made use of to press the lower portion of the tonsil through the ring. 3. The upper pole



of the tonsil is made to enter the ring by pressure of the index finger of the operator's free hand on the anterior faucial pillar and outer part of the soft palate. By this method it is possible with practice to remove the whole tonsil with its capsule in all but very exceptional cases. The guillotine which I have designed differs from the ordinary so-called "Mackenzie" pattern chiefly in the following respects:—1. The shaft is short and very strong, so as to resist without bending the considerable pressure required. 2. The knife is reversed on its long axis so that the flat surface of the blade faces uppermost (away from the handle), and the bevelled surface downwards (towards the handle). Since the uppermost surface of the ring is applied over the tonsil it is clear that this reversal of the blade will enable it to enter more deeply between the tonsillar capsule and the surrounding areolar tissue, the bevelled surface of the blade tending to dislocate the tonsil from its bed. 3. The handle is designed to permit of the maximum leverage. The instrument may be regarded as a lever of which the *weight* is represented by the pressure of the upper surface of the ring on the lateral wall of the pharynx, the *fulcrum* is the index finger occupying the notch at the angle, while the *power* is applied mainly by the ulnar border of the hand resting on the transverse projection at the lower end of the handle. The instrument is held in the right hand in removing the right tonsil and *vice versâ*. 4. The arrangement by which the parts can be detached for cleansing purposes I have borrowed from the guillotine designed by Mr. Hugh E. Jones, a slight modification only having been rendered necessary by the reversal of the blade.

The guillotine is made in three sizes, the smallest with circular and the others with oval aperture. The smallest size should be used through which the tonsil can be made to pass. The best results are obtained with the knife edge

[1] See Journal of the American Medical Association, July nd, 1910, p. 60, and March 25th, 1911.

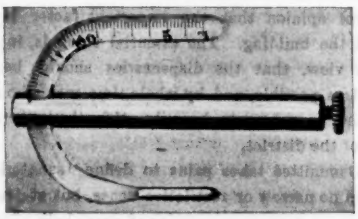
dull. The instrument has been made for me by Messrs. Mayer and Meltzer, 71, Great Portland-street, London, W.

THOMAS GUTHRIE, M.A., M.B., B.C. Cantab.,
Liverpool. F.R.C.S. Eng.

A NEW DESIGN OF CLINICAL THERMOMETER.

HARDLY a day passes without medical men and nurses alike being reminded of some of the exasperating defects of the ordinary straight clinical thermometer. Perhaps the most glaring of these is its positive refusal, in certain individuals, to lie under the tongue when carefully placed there. Even if the bulb be retained between the under surface of the tongue and the floor of the mouth for the allotted minute or half minute, as the case may be, the temperature recorded is not accurate. During the process of graduating a thermometer the whole instrument is

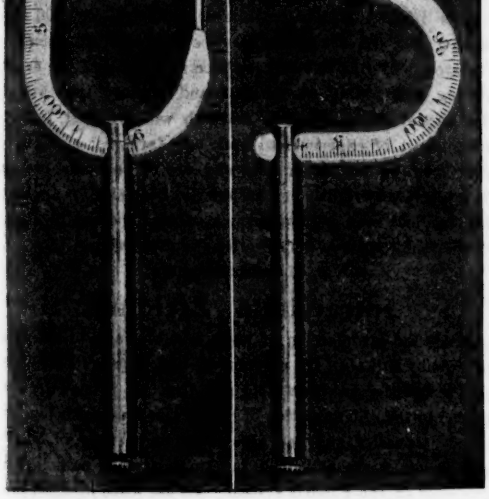
FIG. 1.



Position in case.

immersed in water of known temperatures while the marks indicating the different degrees are being registered. It therefore follows, logically, that the whole thermometer ought to lie on the floor of the mouth, under the tongue, in order to ascertain the temperature in that part. The thermometer I now wish to place before the profession is an ordinary small

FIG. 2. FIG. 3.



Ready for use. Position for "shaking down."

one, which has been carefully curved to lie on the floor of the mouth, under the tongue, without the possibility of rising above it. For convenience sake there is a small shaft, to serve as a handle, with a hole at one end through which the glass tube passes and a screw at the other which can be adjusted to fix the thermometer at any required angle. To shake the mercury down, the handle is moved to the distal end, the screw readjusted to hold it in this new position (Fig. 3), and a few vigorous jerks will bring about the desired result. The practical advantages of this new thermometer are, therefore, the following: (1) That on account of its shape it can be easily placed and retained sublingually in the best possible position for obtaining an accurate temperature; (2) that on account of its total submersion under the tongue it gives a more scientifically accurate registration than the ordinary straight thermometer; (3) that the power obtained by fixing the handle at the distal end of the tube enables the mercury to be the more readily shaken down; and (4) the risks of breakage of the thermometer by the patient's teeth are entirely obviated.

Mr. Francis Cooper, manufacturing chemist, Tottenham-lane, Hornsey, has made this little instrument for me to my entire satisfaction. From him, therefore, all information respecting it can be obtained.

T. WILSON PARRY, M.A., M.D. Cantab.
Crouch End Hill, N.

BRITISH MEDICAL BENEVOLENT FUND.

AT the April meeting of the committee 18 cases were considered and grants amounting to £180 made to 17 of the applicants. Appended is an abstract of the cases assisted.

Widow, aged 89, of M.R.C.S. Small capital left by husband has been unavoidably exhausted, and applicant is now entirely dependent on an old-age pension of 5s. a week. Voted £12.

Widow, aged 47, of M.R.C.S. No income, and is endeavouring to maintain herself by taking boarders at a small house in the country. Voted £10.

Daughter, aged 64, of late M.R.C.S. Has supported herself and a crippled sister by teaching and acting as organist, but now finds great difficulty in obtaining pupils. Voted £12, to be shared with sister.

Widow, aged 74, of L.R.C.P., L.R.C.S. Edin. Quite unprovided for at husband's death a few months ago and has applied for an old age pension. Voted £12.

Daughter, aged 66, of late M.R.C.S. Used to be a police court missionary, but was obliged to resign on account of ill-health and is now entirely dependent on friends. Voted £12.

Wife, aged 39, of M.R.C.S., who is incapacitated owing to a mental breakdown. Endeavours to support herself and two sons by taking boarders, but is unavoidably in arrears with her rent. Voted £15.

Widow, aged 38, of L.R.C.P., L.R.C.S. Edin. Unprovided for at husband's death a few years ago and supports herself and two children by nursing, but asks for a little help towards the education of the elder. Relieved once, £10. Voted £10.

Widow, aged 39, of L.R.C.P., L.R.C.S. Edin. Two children, the elder a pupil governess and the younger at an institution. Endeavours to maintain herself by nursing but finds difficulty in getting continuous work. Relieved six times, £50. Voted £5.

Widow, aged 53, of L.F.P.S. Glasg. No income; six children, of whom two are dependent and one is temporarily out of work owing to ill health. Relieved eight times, £82. Voted £12.

Daughter, aged 57, of late L.R.C.P. Edin. Used to be a dressmaker, but is now unable to obtain regular employment and is dependent on the help of a friend and such occasional light work as she can find. Relieved seven times, £53. Voted £6.

Widow, aged 41, of L.R.C.P., L.R.C.S. Edin. Seven children, aged 15½ to 1½ and income only 15s. a week. Voted £12.

Daughter, aged 56, of late M.D. Edin. No income; used to be a governess, but is now dependent on small uncertain earnings from sewing. Relieved twice, £15. Voted £12 in 12 instalments to be shared with her sister.

Daughter, aged 65, of late M.R.C.S. Is unfitted for any occupation and practically dependent on this fund and a small pension from another charitable society. Relieved 13 times, £132. Voted £12.

Daughter, aged 50, of late M.R.C.S. Used to be a companion, but is now nearly blind and quite incapable of any occupation. Small savings exhausted by illness. Relieved once, £12. Voted £12.

Widow, aged 49, of L.R.C.S., L.R.C.P. Edin. No income; two sons only able to give slight help. Relieved eight times, £87. Voted £2, and case to be reconsidered.

Widow, aged 49, of M.B., B.Ch. Aberd. After husband's death a few years ago supported herself as a nurse, but is now quite broken down in health and dependent on relations who can ill afford to help. Relieved four times, £57. Voted £12.

Daughter, aged 69, of late M.R.C.S. Was provided for at father's death, but lost part of her capital through the failure of a bank, and the rest in the endeavour to establish a boarding house. Relieved twice, £24. Voted £12.

Contributions may be sent to the honorary treasurer, Dr. Samuel West, 15, Wimpole-street, London, W.

THE Indian students in London are giving a performance of the romantic Indian drama, *Ayesha*, by the late Mr. B. C. Chatterjee, C.I.E., on Saturday afternoon (May 4th) at the Whitney Theatre, in aid of the funds of St. Bartholomew's Hospital.

THE LANCET.

LONDON: SATURDAY, MAY 4, 1912.

The Report of the Tuberculosis Committee.

AN important interim report has been issued this week by the Departmental Committee on Tuberculosis appointed a little more than two months ago, in connexion with the National Insurance Act, by the Chancellor of the Exchequer. The names of the Committee were published in THE LANCET of Feb. 24th, and the terms of reference were, it will be remembered, "to report at an early date upon the considerations of general policy in respect of the problem of tuberculosis in the United Kingdom, in its preventive, curative, and other aspects, which should guide the Government and local bodies in making or aiding provision for the treatment of tuberculosis in sanatoria or other institutions or otherwise." The Committee was, in fact, asked to bring the Local Government Board and the new Health Committees into harmonious working with respect to a difficult and important section of preventive medicine, and in our opinion the task has been admirably discharged in the face of many difficulties and of time-pressure.

The report, happily, is unanimous, and its object is to outline a general scheme of coördinated effort for the prevention, detection, and treatment of tuberculosis. After laying down certain general principles, which do not invite criticism, the report gives a short survey of the existing provisions for fighting this disease, and it notes that several county medical officers of health have already drawn up schemes for dealing with tuberculosis in their districts in anticipation of the work which may devolve on county councils under the Insurance Act. One such scheme, prepared by Dr. R. A. LYSTER, county medical officer of Hampshire, appears in another column of our present issue, and is of considerable interest especially when its proposals and conclusions are placed side by side with those of the Departmental Committee. Upon a number of important questions of organisation and administration Dr. LYSTER'S Memorandum and the Committee's report are in close agreement, though this concord of opinion might well have been expected, seeing that the Committee received memoranda from a large number of public bodies and public officials, all of whom were confronted with the same difficulties. Dr. J. NIVEN at Manchester, Dr. W. H. WYNN at Birmingham, Dr. E. WALFORD at Cardiff, are all responsible for schemes of similar purport, and the Departmental Committee has had the results of wide practical experience to guide it. The importance of comprehensiveness and elasticity in any national antituberculosis scheme, and the necessity for the coöperation of the general practitioner as one of the elements of success, are matters that must be common to any wise set of recommendations for the prevention of tuberculosis. The Committee recommends the provision in each area of two closely connected units—a tuberculosis dispensary and a place for institutional treatment, and accepts the usual view that there should be available one bed in a sanatorium for every 5000 of the population. The Committee's report deals very fully with the aims and functions of the proposed tuberculosis dispensaries. These are to be the common centres in each unit area for diagnosis and for the organisation of treatment generally; they will serve as receiving houses, clearing houses, information and education bureaux, and as centres for curative treatment and after-care. It is calculated that from 225 to 300 such dispensaries will be needed for the United Kingdom in the immediate future, but the Committee is clearly of opinion that the important factor is the staff and not the building. The essential thing is, in the Committee's view, that the dispensaries should be as well officered as possible, and by whole-time men who should be instructed to coöperate heartily with the general practitioners of the district.

The Committee takes pains to define "sanatorium treatment" in no narrow or restrictive sense, but states that for various reasons a large proportion of cases, both of pulmonary and non-pulmonary tuberculosis, require treatment for a longer or a shorter period in an institution. Using the terms "sanatorium benefit" and "sanatorium treatment" in their widest significance, the Committee regards the sanatorium provisions of the National Insurance Act as a valuable new weapon in the fight against tuberculosis, and lays great stress upon the point that the coöperation of the general practitioner will practically have the effect of raising the capitation fees under the National Insurance Act. It is estimated that under the Act the sum of £880,000 per annum will be available for the treatment of tuberculous insured persons, while in addition £58,800 per annum will be set aside for the purposes of scientific research, and £1,500,000 have been appropriated for establishing and aiding sanatoriums and kindred institutions. The money to be spent in research will, we trust, include the support of experimental work on a farm, for the lessons that may be learned in this way are of particular value. The report very rightly emphasises the necessity for appointing medical men with proper experience and qualifications to the senior posts at dispensaries and sanatoriums.

Intra-vitam Staining.

SINCE the introduction of methylene-blue as a histological reagent by EHRLICH the progress of histology in its relationship to function has been rapid and fruitful; it has *inter alia* helped in the differentiation of the various kinds of colourless blood corpuscles, and has elucidated by a study of Nissl's granules in nerve cells the functions of and pathological processes in the nervous system. Its use when injected into the blood stream has, however, been limited by the circumstance that it is a toxic agent, and in doses beyond a certain point is fatal. We have, however, in the present issue of THE LANCET, the opportunity of publishing a paper by Professor EDWIN E. GOLDMANN, in which he shows that

other blue pigments do not possess this disadvantage, and he has already obtained most valuable results by the intra-vitam method of staining. One of these dyes is a derivative of pyrrhol (pyrrhol blue) and another is a nearly related substance known as isamine blue. Rats and mice injected with a solution of such stains assume a blue colour and remain in unimpaired health. Sections subsequently prepared from their tissues and organs show the dye to be incorporated in certain granular cells scattered through the various organs. Professor GOLDMANN recently demonstrated his sections at meetings both of the Royal Society and of the Physiological Society, and those who had the opportunity of seeing them were struck not only with their beauty but also with the convincing way in which they supported his contentions. The numerous illustrations which appear in his publications reviewed in our current issue (p. 1203) should be consulted by those who did not have the advantage of seeing the actual preparations.

By means of the intra-vitam isamine blue stain it is possible to differentiate certain of the connective tissue corpuscles of the skin and subcutaneous region, the histogenetic migratory cell found in all organs except the nervous system, the stellate cells of the liver first described by KUPFFER, the interstitial cell of the testicle, the cortical cells of the suprarenal body, the epithelium of the renal tubules, and so forth. As an improvement in mere microscopic technique the advance is thus an enormous one; but it is much more than this, for Professor GOLDMANN has shown that the action of these cells in reference to this stain is a guide to the physiologist and pathologist in determining the functions of cells in reference to normal products of metabolism or other foreign (pathogenic) substances. The cells which have the power of attracting the foreign dye also have the same power in reference to such materials as fat, glycogen, and iron. In the light of the knowledge obtained by the intra-vitam method of staining he has pursued the subject in reference to the functions of the placenta, and shown that certain granular cells of that organ have the power of attracting nutrient materials from the maternal blood, and temporarily storing them before passing them on to the fœtal circulation for distribution to the embryonic tissues. These tissues in their turn have varying powers of selection for the substances in question. We mention this as a striking example of the importance of the method for elucidating function. The method also bids fair to play an equally valuable rôle in the investigation of pathological processes, and our readers have in our columns the opportunity of reading a summary of what Professor GOLDMANN has already found in his study of the spread of tuberculous infection when the bacilli of avian and bovine tuberculosis are introduced into the peritoneal cavity. Up to the present time he has almost exclusively used rats and mice in his researches in the hope that a study of these animals in the normal state may help him in his attempt to solve the cancer problem.

At the present day, when so much is being done in cancer research, particularly of the kind which to the public, though not to the biologist, appears to have small practical result, a new method which seems at all likely to play any part in the final solution of a complex subject is sure of a welcome. The bacteriologist and the chemist will continue to contribute their part to the solution of the meaning of the term malignancy, but in addition to this, and as a basis on which to build, the actual morbid anatomy of a tumour and its surroundings must be accurately known. It is in this last-named direction that Professor GOLDMANN'S investigations are likely to be valuable. He finds that huge collections of blue-stained macrophages surround the growing tumour, and these cells, the presence of which is a local reaction produced by the growth, are singularly like the cells which in the placenta form the storehouse for the nutrition of the embryo. In fact, if a cancer is present in a pregnant mouse there is a rivalry between the two sets of cells to obtain possession of the blue dye. On the supposition that the blue dye is only a sample of what is the case in nutrient materials these macrophages around the tumour doubtless minister to the nutrition of the malignant cells. This hypothesis is supported by the observation that if pregnancy supervenes in the tumour-bearing mouse the placenta usually wins, and the tumour atrophies. Professor GOLDMANN has already some evidence that in the non-pregnant animal the liver plays a similar part, and he has commenced some attempts to control cancerous growths by interference with the functions of the liver. It is yet too early to do more than express the wish that such efforts will be crowned with success. We must be content, using the now historic phrase, to "wait and see."

Incidence of Notifiable Infectious Diseases in Sanitary Districts.

A STATISTICAL report has recently been prepared for the Local Government Board by its medical officer, Dr. ARTHUR NEWSHOLME, containing a complete record of the incidence of notifiable infectious diseases in each administrative county, as well as in each sanitary district of England and Wales, during the year 1911. For a copy of this document we are indebted to the courtesy of its author. It is the first official register of infectious sickness that has been published in this country. As far as the diseases included are concerned it supplies the natural complement to the system of death registration which has been in force since 1837, but which, though useful as a rough measure of the severity with which these diseases affect given localities, can never be accepted as indicating numerically the prevalence of sick cases, or the necessity of administrative measures for their prevention. As a first instalment the issue of this national register will be appreciated by the medical profession, but the full value of sickness registration cannot be realised until the records of several years are available. Dr. NEWSHOLME gives an interesting history of the movement which has culminated in recent legislation for the notification of infectious disease, and in connexion with the projects of earlier years for a similar purpose the names of the late W. H. RUMSEY and the late BENJAMIN WARD RICHARDSON deserve to be remembered; whilst the name of Dr. ARTHUR RANSOME, now of Bournemouth, and formerly of Bowdon, the indefatigable President of the Manchester and Salford Sanitary Association, will occur to our readers as the pioneer of sickness registration in the

north of England. The returns issued in 1875 by the Metropolitan Association of Medical Officers of Health and shortly afterwards by the General Board of Health, as well as those subsequently compiled by the British Medical Association, may be regarded as partially successful attempts to accomplish the desired object; but presumably because of their entirely voluntary character they came eventually to be discontinued.

In the tables accompanying the present report the incidence of the principal notifiable diseases is shown for the year 1911 in each of the 1794 sanitary districts of England and Wales. In these tables, not only the number of cases reported, but their proportion to population is shown in adjacent columns. We are not sure that the publication of attack-rates for all these districts is desirable. In the early days of compulsory notification, when the system was on its trial, this practice was deprecated by Sir RICHARD THORNE, apparently for sufficient reasons. But since his death notification has gained in completeness, and the calculation of attack-rates is found convenient for administrative purposes. Nevertheless, the danger of publishing rates for small areas and brief periods of time must still be borne in mind. To indicate more clearly the effect of season on disease prevalence a diagram is presented showing the curves of attack by scarlet fever, diphtheria, and enteric fever severally in each week of the year. In future years we hope to see a further development of the graphic method, after the manner with which the publications of the Registrar-General have familiarised us. Examination of the tables for 1911 shows that among the administrative counties there are 23 in which the attack-rates from scarlet fever, 17 from diphtheria, and 14 from enteric fever were above the average for England and Wales, the remaining counties experiencing attack-rates either equal to or below the average. In addition to the diseases notifiable under the general Act, particulars are given of other diseases, the notification of which was legalised by special resolution in parts of the year under notice. Among these may be mentioned acute poliomyelitis, cerebro-spinal fever, and ophthalmia neonatorum. The notification of pulmonary tuberculosis is proceeding apace, as many as 35,000 cases having been reported during the year, but this figure is certainly much below the total actually occurring and remaining unreported in England and Wales as a whole.

It is pertinent to examine the grounds for the limitation of registration to the few maladies in which the communicability from the sick to the healthy is already established, and which, accordingly, are compulsorily notifiable. We do not think that this limitation can be defended. In the first place, it may be asked, Are there no other prevalent diseases that are communicable, and, therefore, dangerous to the community? As the result of recent investigations we know that several conditions formerly regarded as merely local are now proved to be definitely infective in nature. As a prominent but by no means solitary instance pneumonia may be specified as an affection which, either directly or as a complication, probably accounts for a greater loss of health, if not of life, than any other single disease. The microbic origin of this condition has been fully established, and its communicability has been proved by clinical experience; and yet no attempt has hitherto been made to ascertain the amount of mischief caused by this insidious destroyer beyond what may be inferred from its ever-changing fatality. What is really needed, not only as a powerful means of protecting the public health, but as an expedient for advancing the progress of medical science, is a national registration of non-infectious as well as of infectious disease. Now that England and Wales are parcelled out into sanitary (in place of Poor-law) areas, each of which is under the charge of a district medical officer of health, the public will reasonably demand the maximum of protection against loss of health and of life which can be obtained in return for the considerable expenditure entailed by the modern system of administration. By utilising existing machinery alone a beginning at any rate could presently be made. The experience of the Local Government Board must be that the authorities of the public hospitals and dispensaries are not unwilling to coöperate in compiling the sickness returns; and if, by suitable modification of the "medical relief books," periodical returns of pauper sickness could be secured, arrangements might readily be accomplished for the registration of all the sickness treated at the public expense—which forms a large portion of the aggregate of sickness occurring in a community.

Annotations.

"Ne quid nimis."

THE HEALTH OF EUROPEANS IN THE TROPICS.

THOSE who have read the old records of what took place in some of our British colonies, such as those of the West Indies or the West Coast of Africa, must have been struck with the terrible loss of life that occurred, from malaria and yellow fever for example, more particularly among soldiers and sailors sent out to protect the colonists. Since that time great improvements have been brought about, but it is not so long ago that any European proceeding abroad to take up his residence in a tropical region was regarded as undergoing grave risks to his life and health. Surprising advances in our knowledge of tropical medicine and hygiene have taken place of late years, and it is not too much to say that in the near future, within certain limits, the health of the white man in the tropics will be as safe as it would be at home. Particularly dangerous to the European resident in hot countries have been those maladies due to parasites transmitted by insect hosts, but it is especially in this branch of medicine that wonderful progress has lately been made; and with this new knowledge of the etiology of such diseases has come indication of the way to prevent them. In THE LANCET of this week we publish several communications, all of them relating in one way or another to the question of how the health of the European is safeguarded under a tropical environment. In our notice of the report of the Advisory Committee for the Tropical Diseases Research Fund will be found some account of the improvement and advances in disease prevention which have taken place in certain of our colonies and dependencies. Some idea has been gathered from a recent report of the Colonial Office of the great saving in life and health of Europeans in West Africa which has been brought about by the adoption of modern methods for preventing tropical disease; so that at the present time it

is no longer justifiable in connexion with the West Coast of Africa to speak of it as "the white man's grave." Since the British soldier has to serve part of his time abroad it is only right that he should have opportunities, as far as is practicable, for acquiring some practical knowledge of sanitation as applied to tropical conditions; in this connexion the paper by Major R. J. Blackham, R.A.M.C., on Sanitary Instruction of Soldiers in India, will be read with deep interest. From what we have stated it is obvious that a great deal is being done to protect the health of Europeans residing in our tropical possessions, and the share which the Government and the Schools of Tropical Medicine of London and Liverpool alike have had in this good work should not be forgotten.

EUGENE ARAM.

IT is a question which, with our enlarged knowledge, we may well debate at the present day, whether half the criminals, whose executions by hanging, and sometimes by strangulation and burning, are described in the historic "Newgate Calendar," really deserved their fate even according to the draconic criminal code of the eighteenth century. Turning the leaves of Volume IV. of the Calendar at random we come, for instance, on the trial of Mary Edmondson for killing her aunt, and we are tempted at once to doubt whether this was not a case of assassination perpetrated during the epileptic state by a pious and usually harmless young woman. Immediately afterwards we light on the famous case of Eugene Aram, immortalised by Hood's poem, and rendered memorable by Bulwer's novel, and to many playgoers still in middle life by Sir Henry Irving's recitation, in which from a quiet beginning the great actor attained to a terrific crescendo that left his audiences breathless. Aram's case, as recorded for us in the Newgate annals, sets us wondering whether he was fairly condemned despite his confession. He was, as is well known, a most unlikely murderer. A profound student, a philologist who, as Dr. Garnett has pointed out, was one of the first to bring the Celtic languages into the zone of the Indo-European family, a valetudinarian and a weakling, he seems the last person in the world whom one would have suspected of a deliberately planned murder, fiercely carried out at night with a great display of physical energy and boldness. Aram was confronted many years after the murder of his supposed victim, one Clarke, a shoemaker, with certain old bones, which a man in search of limestone had dug up in St. Robert's Cave, near Knaresborough. The bones looked old, and Aram maintained that they were probably ancient. His defence was a masterpiece—the fact was remarked upon by his judge. He pointed out that England is in some sort an antique burial-ground, and that in every old cave lies buried a body which, if not prehistoric, may well have been that of some hermit or other mediæval occupant. The bones he was supposed to have buried might, he said, have been very ancient or those of a Cavalier or Parliamentarian soldier. His speech on cave-burial strangely resembles a Hunterian lecture, and it is curious to reflect that the Hunterian Museum has to some extent witnessed against him many years after his death. We have it on the authority of Professor Keith himself that a fragment of parietal bone, recently examined at the Royal College of Surgeons, and credibly believed to have belonged to Eugene's victim, is not really ancient, that it was fractured at the time of burial, and that the fracture is somewhat older than the broken outer edge of the fragment. Thus does anthropological science sometimes support ancient surmise, for Aram was condemned on something much in the nature of surmise. Another osseous fragment which accompanied Clarke's reputed parietal bone turns out on examination to belong to a roe-deer. Had Aram and his confederate in crime—for the man who turned King's evidence against him doubtless helped him to bury the corpse—been aware of the existence of ancient bones of animals in or near St. Robert's Cave, the defence would have been considerably strengthened. Aram might even have maintained that his accusers had lighted upon something in the nature of the Ipswich man of latter times.

THE TREATMENT OF LEPROSY.

FROM an esteemed correspondent, who has had an exceptional experience of leprosy in the East, we have received a communication in which he expresses himself as being in general agreement with the conclusions at which we arrived concerning the value of nastin in our article on the treatment of leprosy published in THE LANCET of March 30th. He urges that further attention should be directed to the bacteriological researches on which Professor Deycke founded his nastin treatment, and that these investigations should be studied in relation with those which have already been carried out by two officers of the Indian Medical Service, Major E. R. Rost and Captain T. S. Beauchamp Williams. While on the one hand Professor Deycke regarded the presence of the streptothrix which he isolated from his cultures made from leprous patients as an accident more or less, and decided that only the fatty principle obtained from this organism was of service in the treatment of leprosy, Major Rost and Captain Beauchamp Williams, on the other hand, believed the streptothrix which they found in their cultures to be the true parasite of the disease, and that a vaccine for treating lepers should be prepared from the whole organism and not from the fatty content alone. On looking at Professor Deycke's last published paper on the subject we find that he admits that at first he thought that this streptothrix might be the specific organism of leprosy, but soon felt himself forced to abandon the idea. He now maintains that the specific and favourable reactions arising after the use of nastin depend entirely upon the injection of the fatty substance contained in the streptothrix and to which neutral fat he has given the name of "nastin." He states distinctly that it is an error to suppose that his steptothrix is identical or even "congeneric" with the true parasite of leprosy. In India we understand that, as a result of the work of Major Rost and Captain Beauchamp Williams, a vaccine has been prepared from the acid-fast phase of the streptothrix, which these observers have cultivated from the discharges of leper patients and which they regard as the specific organism of the disease. With this vaccine, it appears, better results have so far been obtained than with nastin or any other remedy that has been tried in the treatment of leprosy. Our correspondent is particularly careful to remind us that it is far from his intention to belittle in any way the bacteriological researches made by Professor Deycke, on which the nastin treatment has been based; these are acknowledged to have been of great importance, but our correspondent's contention is that Professor Deycke has made an erroneous interpretation of his results. The vaccine, as recommended by Major Rost and Captain Beauchamp Williams, is being at present prepared in the Bombay Bacteriological Laboratory at Parel. What seems now to be needed is a careful and prolonged trial of this vaccine in appropriate cases so as to ascertain whether the claims advanced on its behalf are, or are not, founded on a substantial basis. It is also suggested that those who have opportunities should make an inquiry into the clinical manifestations of leprosy in order to discover what part is played in them

by the streptothrix in its various phases. We need hardly point out that in cases of leprosy where there have been grave alterations produced by the inroads of the disease upon the tissues it cannot be expected that any drug or vaccine will restore these tissues once they are seriously altered. Much, however, may be achieved with cases brought under suitable treatment in the earlier stages of the malady and when the remedy can be applied in time. It is unfortunate that the presence of leprosy is so often concealed as long as possible, with the consequence that the patients in many instances do not come under medical treatment until it is too late to expect permanent benefit from the remedies applied. All that can then be done is to afford alleviation of the symptoms as far as practicable.

THE 250TH ANNIVERSARY OF THE ROYAL SOCIETY.

THE following is the provisional programme of arrangements for the celebration of the 250th anniversary of the Royal Society in July :—

Monday, July 15th.—An evening reception of delegates at the room of the Royal Society.

Tuesday, July 16th.—In the morning a commemorative service in Westminster Abbey; in the afternoon the official reception of delegates at the Royal Society and presentation of addresses; in the evening a commemorative dinner at the Guildhall.

Wednesday, July 17th.—In the morning visits to places of interest in London; in the afternoon the Duke of Northumberland gives a garden party at Syon House, Brentford; in the evening a conversazione at the rooms of the Royal Society.

Thursday, July 18th.—In the morning visits to places of interest in London; in the afternoon the King gives a garden party at Windsor to which the delegates and Fellows of the society will be invited.

Friday, July 19th.—The delegates will visit Oxford and Cambridge Universities.

THE READJUSTMENT OF MEDICAL EDUCATION IN NORWAY.

DURING the last decades medical education has become an increasingly heavy burden which bids fair to crush many a student who in earlier days would have become a useful member of the medical profession. Hitherto changes in the medical curriculum have almost invariably been synonymous with an increase in one direction or another of the tale of specialised subjects. In Norway it has been admitted for some time that this process has been detrimental to the general usefulness of the younger generation of medical men, who have thus acquired a smattering of modern medical knowledge at the expense of that handicraft which was taught in the old school and which is still necessary to-day. In 1902 a discussion in the Medical Society in Christiania on the readjustment of the medical curriculum was continued off and on for about a year, and led to the appointment of a committee, the findings of which have recently been reported by one of its members, Dr. A. Tanberg, in the *Norsk Magazin for Laegevidenskaben* for February. As medical education in Norway differs in detail rather than in principle from that of this country this report is of interest; but the radical changes proposed will doubtless meet in some quarters with considerable disapproval. As the laws governing normal and pathological processes are now clearly taught throughout the medical curriculum, the necessity for special instruction in biology has become less. It is therefore proposed that zoology should be omitted as a special subject from the curriculum, comparative anatomy alone being retained and included in the study of human anatomy. The exclusion of botany as a special subject is also proposed, for the relation of botany to medicine has grown more remote now that the isolation of the active principles of plants has come into the manufacturer's hands. The study of plants possessing therapeutical or toxicological properties may be included in pharmacology, while the anatomy and physiology of plants, affording as they do an excellent training for the subsequent study of animal life, should be so far retained that ten lessons in this subject become compulsory. The study of physics, on the other hand, is of growing importance in medicine, and it is therefore proposed that more attention than heretofore should be given to those branches of physics which are most important in medicine, and as the knowledge of such physics is now acquired by the student in connexion with physiology, its separate study will not add much to his work. It is estimated that the above changes will shorten the first part of the medical curriculum considerably, and that this reduction will facilitate the adoption of other changes in medical education, which are of an expansive rather than of an abbreviated character. Briefly, these changes aim at more thorough training in mental disease, instruction in massage and mechano-therapeutics, the therapeutics of light, and the preparation of food. At present the theory of massage and the results to be obtained therefrom may be familiar to the student, but he seldom has a practical knowledge of this subject or of the indications for its use. The same also applies to the study of diet in disease, the importance of which has now become more generally recognised. Another anomaly in present-day medical teaching is found by the committee in the care with which facilities are afforded the student for attending academic courses of lectures without interruption, while practical instruction in the various special departments is much hampered by the choice of inconvenient hours. The overlapping which ensues must inevitably lead to the loss of practical knowledge. Only a minority in the committee, however, have come to the conclusion that this fault is to be remedied by a drastic reduction of systematic lectures, their place to be taken by text-books and demonstrations.

OVARIAN HERNIA IN INFANCY AND CHILDHOOD.

IT has often been remarked that clinical rarities occur in groups. A case of a kind hitherto unknown to the observer is frequently followed by another of similar type, after a short interval only. This curious "law" of coincidence is well illustrated by the experience reported by Dr. Alexis Moshcowitz in the *New York Medical Journal* of March 6th. A female child, five months old, was admitted to the Mount Sinai Hospital under his care in March, 1911, with a diagnosis of strangulated hernia. She had vomited once, nine hours before admission, and there was a tender, tense swelling, of the size of a plum, in the left groin. The child looked well and the bowels were active naturally. Dr. Moshcowitz agreed with the diagnosis of strangulated hernia, but thought the sac contained the uterus or its appendages of the left side, since there were no intestinal symptoms and vomiting had ceased. This surmise proved correct. The sac, which was of the inguino superficial type, and probably congenital, since it was densely adherent to the aponeurosis of the external oblique muscle, was found to contain the left ovary and tube in a gangrenous condition. This was caused by complete torsion of the ovarian pedicle and rendered extirpation necessary. Recovery was complete. In August, 1911, a little girl, aged 7 weeks, was admitted with a history of 20 hours' crying coinciding with the appearance of a small swelling in the right groin. On incision the ovary, which lay within the hernial sac, was found to be purple in colour but viable; the pedicle slipped back into the abdomen, so that it was not possible to say whether it had been twisted or not. The sac was extirpated but the ovary was spared; here, also, the outcome was satisfactory. Dr. Moshcowitz was able to discover 40 cases of ovarian hernia in childhood recorded in medical literature; of these all but three occurred in children under 1 year. In 26 the pedicle was known to be twisted; in 10 torsion was not noted but probably existed; and in 4 only is it certain that there was no twist. From the nature

of the sac and its liability to adhere to the round ligament Dr. Moshcowitz concludes that in most cases the hernia is a congenital one. It is interesting to note that hernia of the ovary is almost limited to nurslings and to women of the child-bearing decades. Two theories have been advanced to explain the liability to torsion; one attributes it to the screw-like motion imparted to the escaping ovary by the shape and direction of the ring, the other to over-distension with elongation and twisting of the veins of the pedicle. An accurate diagnosis is rarely made, but Dr. Moshcowitz thinks it ought to be possible in a majority of cases. Operation should be early if the ovary is to be saved, as it readily becomes gangrenous. The prognosis is good, 37 out of the 40 cases having ended in recovery.

GUNSHOT WOUND OF THE PREGNANT UTERUS.

GUNSHOT wound of the pregnant uterus is a very rare injury. In the *Journal of the American Medical Association* of March 16th Dr. H. W. Fudge has reported the following case. A well-developed girl, aged 16 years, was taken to hospital at 8 P.M. About 1 P.M. she sat down and placed the butt of a Winchester rifle on the ground and the muzzle against her side and discharged the contents into her abdomen. A practitioner who was called applied an abdominal bandage and ordered her removal to hospital. She was taken on a farm wagon a distance of nine miles. On examination she was found nine months pregnant. The bandages and clothes were saturated with blood. The pulse was 116 and fairly good, the respirations were 34, and the temperature was 100·2° F. The bullet had entered about 7 inches to the right of the umbilicus by an aperture large enough to admit the index finger. It passed through the abdominal cavity and emerged 1 inch to the left of, and slightly below, the umbilicus. From the wound of entrance a small portion of omentum was protruding, and the surrounding skin was blackened with powder. From the wound of exit there escaped from 6 to 8 inches of umbilical cord. Blood was oozing from both wounds. A median incision was made from the umbilicus to the pubes. On opening the abdomen a fully developed child was found to have escaped into the abdominal cavity through a wound extending diagonally across the anterior aspect of the fundus. The child was removed with clots and a large amount of bloody amniotic fluid, and was found to have been killed by a bullet wound through the buttocks, which shattered the spinal column and pelvis and exposed the abdominal contents. The uterus was firmly contracted but still contained the placenta. This was removed without much hæmorrhage. The uterus was raised, and large pads were packed around it. A blackened rent, about 4 inches long, extended across the anterior surface. The rough blackened edges were cut away and the wound was sutured with two rows of chromic catgut. The uterine sinuses began to bleed freely when trimmed, but the hæmorrhage was quickly controlled by the sutures. The abdominal incision was closed, a large cigarette drain being left in the lower angle. The entrance wound was enlarged, the charred surfaces were cut away, the omentum was returned into the abdomen, and the opening was packed with iodoform gauze after putting in two or three sutures. The Fowler position was maintained for ten days. On the day after the operation the pulse was 130, the temperature 101°, and the respirations were 32. There was very little pain. The temperature gradually fell until it became normal on the tenth day. From the wound of exit a free flow of pus began on the fourth day and continued until the tenth day, when it ceased. The cigarette drain was removed on the fourth day, and the opening was packed with iodoform gauze once daily. Twenty-five days after admission the patient was discharged, having completely recovered.

SUNLIGHT IN SPRING CLEANING.

THE annual process of spring cleaning is now in full swing except in those rarely well-ordered households where methodical care from day to day does away with the need for an annual orgy of cleanliness. Doubtless modern methods of removing dirt and dust by vacuum machines have reduced much of the delay, discomfort, and inconvenience which inevitably attend the old-fashioned proceedings. The days of carpet-beating are, however, by no means over, highly objectionable as the method of course is when it is carried out in close proximity to the dwelling-house. Nor can it be supposed that beating is as effective in removing dirt and dust as the vacuum cleaning method. The brilliant spell of sunshine, however, which has come in the very midst of the spring-cleaning season this year, has given the housewife a real opportunity of exalting the process to a scientific level. Treatment of household furniture by ordinary disinfectants may be an ideal thing to do in addition to the mere mechanical removal of dirt, but in practice it is inconvenient and the results are not always pleasing. The smell of certain disinfectants is mostly objectionable in a house, and many of them cannot be applied without a risk of injuring domestic fabrics; but the sun, one of the most important disinfectants known, can fill the breach if only it will shine, and this it has been doing most unstintedly during the past few weeks of the spring-cleaning season. Sunlight is fatal to the vitality of the lower organisms, and experiment has proved this to be the case with a number of the most important pathogenic bacteria. It is also well known that the chemical activity of the sun's rays, upon which depend their germicidal properties, attain a maximum in the month of May. Koch showed long ago that the bacillus of tuberculosis was killed by direct sunlight in from a few minutes to several hours, and in a longer time the tuberculous sputum on linen and woollen fabrics was shown to have lost its infectivity. Similarly the action of the organisms of typhoid fever, anthrax, and cholera is arrested. Even a fluid ordinarily favourable to the culture and multiplication of organisms assumes, under the influence of sunlight, antiseptic properties until the environment changes from one which was congenial to the growth of the organism to one which eventually kills it. Sunlight destroys also the toxin of the organism, as has been well illustrated in the case of tetanus, the bacillus of which infests our roads. The sunlight on the road doubtless mitigates many evils; and if a "sunning" of carpets, curtains, furniture, and decorations cannot be made an integral part of the spring-cleaning process (and we see that this is impossible), none the less the presence during the spring-cleaning season of powerful and persistent sunlight is undoubtedly useful.

Dr. Herbert French, assistant physician to Guy's Hospital, has been appointed by the governors honorary consulting physician to the Surrey Dispensary, Great Dover-street, S.E., in succession to the late Sir Samuel Wilks.

THE next Conference and Exhibition on Health, organised under the name of the Biennial Health Conference and Exhibition, promises to be a successful undertaking. The meeting will be held at the Royal Horticultural Hall and the adjoining institute from June 23rd to 27th (inclusive). All public workers and those interested in health questions who apply for tickets before the opening to Miss R. V. Gill, at the offices of the National Health Society, 53, Berners-street, London, W. (enclosing stamps for postage), will receive tickets free of charge. The Conference and Exhibition are under the patronage of H.R.H. Princess Christian.

THE ORGANISATION OF AN ANTI-TUBERCULOSIS CRUSADE:

A Memorandum by

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COUNTY MEDICAL OFFICER FOR HAMPSHIRE.

I BEG to submit the following as a plan for the organisation of an anti-tuberculosis crusade which might, I think, develop into a national scheme.

The Supervising Authority.

It is desirable that any national scheme for dealing with tuberculosis in the United Kingdom should be established on a broad and uniform basis with a view to its being comprehensive, efficient, and economical. The most satisfactory way to obtain this is for the organisation of the scheme to form part of the general health administration by county councils and the largest county boroughs. County health departments are in intimate association with the general work of the county districts and legislation is constantly providing these departments with fresh fields for work. Every part of the county area is now being systematically visited by county medical officers, not only with regard to general health matters, but also in connexion with the medical inspection and treatment of school children, the supervision of midwives, inspection of food and drugs, &c. I suggest that the county council should be the authority responsible, not only for the provision of sanatoriums, but for the supervision and organisation of the complete machinery for the treatment and prevention of tuberculosis, working in conjunction with the local medical officers of health.

Another necessity is that the national scheme to deal with tuberculosis should be organised on such lines as to render it easily capable of absorbing, or readily absorbed by, other schemes or services for providing medical attention. It is easy to demonstrate the fact that there is at the present time a great need for coördination and unification of the various authorities providing medical attention. Thus it may be pointed out that local sanitary authorities are in many parts of the country providing more or less medical care for infants under 1 year old; from 1 to 5 years of age children of the poor depend either on voluntary provision or upon the Poor-law for their medical attention; from 5 to 14 years of age they are to a constantly increasing extent being provided for by county and county borough councils as education authorities; after 14 years they will apparently be provided for by the newly formed Insurance Committees.

In selecting a special disease like tuberculosis to be a subject of a separate scheme of treatment there will be great danger in adding to the existing confusion. It appears to be desirable, therefore, that the scheme for dealing with tuberculosis should be established very largely with a view to coördination and unification subsequently. I suggest that the proper bodies for dealing with the problem are county councils and large county boroughs of 250,000 population or over.

Necessity for Elasticity.

It is not possible at present to estimate with any degree of accuracy either the amount or the extent of the provision that will be required ultimately. For instance, some authorities have stated that the number of persons infected with tuberculosis may be estimated at three times the number who die annually from that disease while other authorities suggest various factors up to 15. A careful estimate of the number of notifications that have been received since consumption became notifiable appears to indicate that the practical factor is most likely to be about 4. The vagueness of the probable number to be provided for makes it extremely desirable that a commencement should be made with an elastic scheme so that the immediate necessities may be met and exact additional provision made when necessity arises. I suggest that a central organisation is best for a commencement, and this should be so built up that it is capable of indefinite expansion locally. The provision of the necessary treatment in large towns is an extremely simple matter, but is a very difficult problem in county areas, and a wide experience in county work will be indispensable in elaborating a workable scheme for such areas.

Sanatorium Provision.

It has now become generally recognised that sanatorium provision of some kind is absolutely indispensable, and clinics and out-patient dispensaries that were originally started with the intention of proving the uselessness of sanatoriums are now gladly availing themselves of hospital wards which they use very largely in the same way as in modern sanatorium treatment. For instance, in connexion with the tuberculin dispensary established at Portsmouth there have been 11 beds continuously in use for some time, and the medical officer of health has, in a recent report, asked for the provision of 25 beds, which he considers *may* be sufficient. Any attempt to deal with tuberculosis without provision of beds is just as foolish as trying to run a large general hospital by only holding an out-patient department.

I suggest that in all areas (county councils and large county borough councils) there should be established a central institution as an essential beginning of the scheme. These central institutions should have accommodation equal to 1 bed per 5000 population. This is a minimum provision and is suggested as a beginning, as too lavish an expenditure on the erection of permanent buildings is not desirable. Linked up with this central institution there could subsequently be established home and dispensary treatment in urban areas, while home and general preventive treatment and supervision of work undertaken by local sanitary authorities (home shelters, home nursing, medical treatment, &c.) could be arranged everywhere. Part of the central institution could be reserved for advanced cases, and considerable extension in the local provision for such cases could be made on the sites of local isolation hospitals and could be managed economically by using the administrative blocks for both purposes.

During the commencement of the working of the scheme at all events I suggest that the majority of notified cases should be passed through the central institution in order that correct diagnosis may be made, careful observation of the patient carried out, some scheme of treatment begun, general education of the patient commenced, and charts and general directions for treatment prepared so that the patient may quickly return home and the treatment be continued locally by general practitioners, while the sanitary authorities could be expected to take up the care of the cases and to exercise their wide powers of prevention and treatment.

Areas.

I suggest that geographical county areas are the best units for the scheme, excluding only large county boroughs of over 250,000 inhabitants. Small counties could be absorbed by neighbouring areas. One reason for suggesting large areas is that a sanatorium institution of less than 100 beds is not economical, largely on account of the fact that the resident medical officer is not fully occupied. The provision of one bed per 5000 inhabitants in a town of 250,000 population would mean a sanatorium of 50 beds, and this could be managed quite economically on account of the fact that members of the staff could be usually occupied outside, because in large urban districts the outside work is condensed on a small area.

Tuberculosis Dispensary or Clinic.

In large urban areas where there are certain to be large numbers of tuberculous people needing immediate attention dispensaries or clinics should be established at once. In such districts there should be little difficulty in providing ample material to justify the employment of whole-time medical officers. At these institutions about 60 out-patients could be treated per day or 300 per week by each whole-time officer. As most of the patients will attend twice a week this represents 150 persons under treatment. Assuming such cases to be continuously under treatment for six months this would represent 300 patients per year treated by each whole-time medical officer. Dispensaries so established in an urban area could deal very well with a considerable rural area immediately surrounding them because, as a rule, railway and carrier facilities develop in connexion with urban centres and the patients could be brought in easily. The establishment of dispensaries or clinics in the greater part of the ordinary county area would be difficult, expensive, and of doubtful benefit. In my opinion, at the commencement of the scheme, the rule should be that the patient should come to the medical officer and not *vice versâ*. This is not only important on the grounds of economy, because a medical

man's time is more valuable than the patient's time, but is also indispensable because the best results in any new form of treatment will only be obtained by specialists, and there will therefore be few medical men really available. The best plan will therefore be to keep such men at central institutions so that they may deal with a maximum number of patients. It might be possible, but in my opinion it is undesirable and wasteful, to establish small dispensaries in a county area, and to work them with a peripatetic medical officer, but the fact that each patient should be seen at least twice a week would make the area covered by each officer quite small and the scheme correspondingly expensive. In my opinion the establishment of dispensaries or clinics to be worked by local practitioners would be unwise.

In estimating the expense connected with the establishment of a dispensary or clinic serious errors are likely to be made, and one already hears of these being established, on paper, "at small expense." In practice, however, it is always found that it is a difficult and expensive problem to find premises for such a purpose, and in many areas it may be confidently expected that special buildings will have to be erected.

Use of General Practitioner.

It should be possible to arrange the scheme so that a maximum amount of work could be undertaken by the general practitioner, and the scheme could be developed with this end in view. The local organisation necessary for the provision of ordinary medical benefit should be of great assistance in arranging this. The scheme will depend upon the general practitioner for most of the early diagnoses and notifications, and his intimate contact and influence with the public should, if properly utilised, be invaluable in any system of prevention. Part of the necessary scheme will involve the provision of expert help for the general practitioner for difficult cases of diagnosis or treatment. In large urban areas the whole-time medical officer of the dispensaries or clinics should be available for this purpose, but in the remaining parts of the county it will be necessary to appoint whole-time itinerant officers. It should be quite easy to arrange for such an officer to visit different areas in succession, and for all medical practitioners to be acquainted with the time of his visits to their district.

In the scheme herein outlined the ordinary notified case would proceed to the central institution and would there be accurately diagnosed and some treatment commenced during a short time there. The case would then return home and the medical practitioner would be informed exactly of the patient's condition, his peculiarities as regards treatment, details of the treatment commenced, and full suggestions for the continuation of such treatment. In the ordinary way this would probably be sufficient, but there should be at the disposal of the practitioner the assistance of the itinerant whole-time medical officer in cases where special difficulties in treatment are met. Some of these difficulties could, of course, be disposed of by correspondence or by telephone. There would be no hesitation on the part of the general practitioner to call in the services of the official if he knew that these were freely at his disposal, and he was assured that there was no danger of being superseded. Treatment by tuberculin injections, or any other form of treatment which may subsequently be developed, is not likely to be beyond the capacity of the average qualified practitioner, especially if expert official help is available, as suggested above. So long as the whole of the treatment is supervised and organised as part of the public health machinery of the county there is no doubt that the public would benefit by the inclusion of the general practitioner in the scheme of treatment and prevention.

A County Scheme.

A county scheme includes educational work, general preventive work, home treatment, searching for disease, provision of sanatorium, sorting hospital and hospital for advanced cases, county laboratory, organisation of voluntary work, &c.

1. *Education work.*—(*a*) Instruction in elementary schools: Instruction in hygiene and in elementary facts concerning consumption should be organised in every elementary school. (*b*) Instruction of teachers: In order that adequate instruction may be given in the elementary schools it would be necessary to arrange for special lectures to be given to teachers on the subject. (*c*) Evening lectures: The lectures to teachers and the popular lectures given locally in the evenings should be given invariably by medical men. I have had considerable experience as an examiner of classes that had been instructed by nurses, and am satisfied that such instruction is not only incomplete, but may in many instances be dangerous. (*d*) Exhibitions: It may be possible to arrange for the well-known tuberculosis exhibitions of the National Association for the Prevention of Consumption to be given at some centres in the county. For the villages a caravan should be provided. (*e*) Cinematograph entertainments: This could be made a very popular form of instruction concerning health and the prevention and cure of tuberculosis. (*f*) Churches and chapels: A special Sunday might be devoted towards the education of the public in this matter. (*g*) Other means would include the provision of central press and information bureau, the distribution of pamphlets, &c.

2. *Preventive work.*—(*a*) Public health work: The recent Public Health Tuberculosis Regulations give wide powers of treatment and prevention to local sanitary authorities, but experience leads one to believe that such powers will not be exercised by the ordinary urban and rural authorities unless definite powers of supervision and organisation are given to county councils. (*b*) Provision of nursing: Many invalids inadequately or improperly nursed are for long periods in such a condition as to render them an easy prey to tubercle bacillus. (*c*) Removal of cases: An important preventive measure is the removal of advanced cases in order that they may be properly educated, and so taught how to prevent the spread of the disease. (*d*) Treatment of predisposed cases: Treatment of predisposed children will prove to be a valuable method of prevention. Residential open-air schools will be necessary. (*e*) Improved supervision of milk-supply: The supervision of the milk-supply by county councils is very desirable.

3. *Health visitors.*—Health visitors should be provided for the county area for the purpose of visiting the homes of patients as well as the districts generally. It is essential that such work should be organised on a large scale if it is to be successful and economical. I suggest that these health visitors should have their duties drawn up by the medical officers of health and the county medical officer, and should work largely under the direction of the medical officer of health. Their duties would include educational work in the home, the instruction of the patient and his family, the recommendation of medical attention where necessary, the formation of lists of children for the school doctor, reporting of sanitary defects, collection of specimens of sputum, &c. It is obvious that this work could be very well and economically coördinated with the work in the homes in connexion with the medical inspection of school children, and the reduction of infantile mortality. The appointment of health visitors would enable every district at once to adopt the Notification of Births Act.

4. *Machinery for detection.*—An indispensable part of the organised searching for the disease will be the complete medical examination of all affected families. In large urban areas this could be easily arranged in connexion with the dispensaries or clinics on the lines that are now well known and have been carried out successfully in several large towns. In rural areas this work could be carried out largely by the medical men who notify the cases, but the supervision and organisation of it should be central.

5. *Sorting hospital or tuberculosis clinic.*—In large towns it is quite easy to arrange for a sorting hospital and for an out-patient tuberculosis clinic to act as a feeder to the sanatorium for suitable cases and for treating other cases to some extent. In a county area, however, I am convinced that the *initial* provision of such local arrangements would lead to a great waste of money and to considerable difficulties of organisation and supervision. It may be suggested that some beds at the local isolation hospital might be used for such purposes, as well as for the care of advanced cases, and in some areas such a course might be practicable. In my experience in three counties, however, I have found personally that such a step is viewed with disfavour by most of the district councils concerned. The setting up of small hospitals in this way would lead to considerable difficulty and expense as regards supervision, and would also necessitate combination of neighbouring districts, a step which experience has shown to be extremely difficult to carry out. For a beginning I am therefore suggesting that the sorting hospital, the sanatorium, and the hospital for the care of advanced cases should be combined for the purposes of county administration.

6. *The county sanatorium.*—A county sanatorium should be provided with at least one bed for every 5000 population. It is difficult to apportion these beds for the work during the first few years, but they would be arranged so as to provide separate accommodation for the diagnosis, education, treatment, and training of male and female ordinary cases, and for the isolation and treatment of advanced cases. All notified cases would be sent to the sanatorium for exact diagnosis and in order that education and treatment may be commenced. In many instances, after a short stay the patient would be sent home and his education and treatment completed there.

Assuming that out of 100 beds provided 70 beds would be available for ordinary cases, and that such patients made an average stay of two months, it would be possible to deal with 420 cases per annum, while 30 beds would be available for advanced cases continuously. In practice I feel confident that the average stay in the sanatorium would average less than one month, so that each bed would represent at least 12 cases. As soon as a case was accurately diagnosed and treatment commenced, there would be, in the majority of instances, no reason for any further stay in the institution. Full directions and exact details for further treatment would be given to the local medical practitioner, and the patient could go home where he would be affected by the far more cheerful influences of home life. The central institution could also be available for the instruction of medical practitioners in the area, an opportunity that would probably be taken advantage of very eagerly. On his return home the patient would be treated by the local practitioner, who would carry on the treatment commenced at the central institution. District councils would be urged to avail themselves of their full powers to attend to him, and voluntary agencies would be informed of his existence and of his special needs.

7. *Hospital for advanced cases.*—This should, as I have said before, be combined with the sanatorium. By this I do not suggest that the cases should be in any way mixed. They should be kept quite distinct from those undergoing treatment for the earlier stages of the disease, but in the interests of economy of administration and establishment charges the hospital should be practically part of the sanatorium. In cases when difficulty was experienced in moving advanced cases some distance from home the local guardians or district council (according to the circumstances of the case) would have their attention called to their existence. Voluntary organisations also would be able to help. By these methods the isolation of the case at or near home would be possible.

8. *County laboratory.*—The county laboratory will, of course, play an important part in the exact diagnosis of tuberculosis and other diseases, and it is an essential factor in the machinery of detection.

9. *District councils.*—District councils have been given considerable powers under the recent regulations. It is suggested that they can best carry out their work in those cases with whom it is decided to carry on home treatment and those who have passed through the sanatorium and have been educated and partly treated. All such cases should be kept under supervision, shelters provided where suitable, and full advantage taken of the wide powers already referred to, including general public health work, improvements in housing, disinfection of houses, prevention of overcrowding, &c.

10. *Boards of guardians.*—In the past boards of guardians have played a very important part in preventing the spread of consumption by isolating advanced cases among the poor. It is probable that they will continue to do this to some considerable extent. Provision should be made at all workhouse infirmaries for the reception of incurable Poor-law cases. Where the consumptive patient is in receipt of out-relief a condition of such relief would be that the instructions of the medical officer of health are carried out satisfactorily. Guardians also should be requested and expected to coördinate their medical service to the needs of the scheme.

11. *Voluntary agencies.*—All existing voluntary agencies should be used, and relief committees, hospital committees, district nursing associations, branches of the Charity Organisation Society, village nurses, &c., should be included in an organised county scheme. As soon as persons are sent from the central institution (or in the event of the treatment being entirely carried out at home) the attention of these voluntary agencies should be directed towards them, and in this way there is no doubt that a great deal of assistance could be given to the average case. The fact that these agencies were waiting to receive cases would enable them to be discharged very rapidly from the central institution. If the patient apparently needed assistance it would be reported to the local joint voluntary committee, which would be mainly concerned with the provision of food, milk, clothes, help in house work, maintenance of family, finding of work, &c.

Voluntary agencies in the county area could be organised centrally into "joint care committees" which would form a very natural development of the "after-care committees" established at present all over the area in connexion with the medical inspection of school children.

General Coördination of Scheme.

1. *County council and officers.*—Medical inspection of children; educational efforts; supervision of milk-supply; supervision of housing; organisation of "sanatorium benefit"; control of sanatorium; general supervision and control of tuberculosis prevention; peripatetic expert staff; health visitors; organisation of search for cases; organisation of voluntary workers.

2. *Local sanitary authorities and officers.*—Powers under Tuberculosis Regulations; supply of open-air shelters, sputum flasks and cups, &c.; disinfection; supervision of sanitary matters; improvement in housing; improvement in workshops and factories.

3. *Guardians.*—Wide powers under Poor-law and Orders; coördination of out-relief with the scheme; coördination of Poor-law medical service with the scheme.

4. *General practitioners.*—Notification; examinations; home treatment; reports; search for cases.

5. *Voluntary workers.*—Joint care committees; organised from county centre.

RESEARCH IN TROPICAL DISEASE.

To anyone who in these latter days is pessimistically inclined we would commend a perusal of the recently issued report of the Advisory Committee for the Tropical Diseases Research Fund.[1]

Constitution of Advisory Committee.

In this volume will be found an account of the advances in disease prevention that are taking place in the Far East; in Africa, North, South, East, and West; in the West Indies; in the Pacific; and in the Tropical Medicine Laboratories in London and Liverpool. The Advisory Committee was constituted by the Secretary of State for the Colonies in 1904, and now consists of 11 members, under the chairmanship of Sir J. West Ridgeway. The revenue of the fund during 1911 amounted to £3345, being made up of contributions from the Imperial Government (£1000), the Government of India (£500), and various Dominion and Colonial Governments. A sum (£3795) slightly in excess of the income was expended in grants to the London and Liverpool Schools of Tropical Medicine, to the London University, and to the University of Cambridge. In each case the principal expenditure has consisted in the payment of teachers or investigators in protozoology, economic entomology, or parasitology. The report itself merely recites the financial arrangements, and states that the committee was consulted on various matters during the year by the Secretary of State, but does not lead one to infer that any meetings or discussions took place concerning the matters dealt with in the appendices. These appendices consist of accounts of antimalarial and other preventive measures that have been undertaken in the colonies and protectorates, of work done in various colonial laboratories, in those of the London and Liverpool Schools of Tropical Medicine, of the professor of protozoology in the University of London, and in the Quicke laboratory at Cambridge.

India and China.

In Ceylon Sir Allan Perry reports that malaria, though prevalent, is not a very fatal disease, and appears to be

[1] Published by H.M. Stationery Office. 1912. Cd. 6024. Price 2s. London: Wyman and Sons, Limited; Edinburgh: Oliver and Boyd; Dublin: E. Ponsonby.

decreasing. It accounts, however, for about one-tenth of the total mortality. No organised campaign against malarial conditions has been attempted, but a beginning is being made at one town in the North-Western Province; quinine is distributed regularly in 324 out of 731 Government schools. Hong-Kong showed an increase of malaria in 1910, attributed by some to increased building activity in districts where the watercourses had not yet been "trained," and by others to the constant succession of showers, which kept the mosquito-breeding pools supplied with water. A by-law prohibits "the breeding of mosquitoes"; apparently the mosquitoes disregard it. Quinine had been distributed, though not to school children, who are, however, taught hygiene, and were to receive quinine during 1911. The prevalence of malaria is attributed in part to close contact with the native Chinese city of Canton, some 4000 Chinese passing backwards and forwards daily. In Mauritius anti-mosquito measures have been undertaken, and quinine is distributed to school children; one outbreak of epidemic malaria occurred, but it was quickly arrested by vigorous anti-mosquito measures and quinine distribution.

Africa.

Coming to Africa we find that on the Gold Coast 10 cases of yellow fever (of which 1 was fatal) occurred among Europeans in Seccondee during April and May; measures were taken to render mosquito-proof public and private wells and tanks, rank vegetation was cut down, pools filled in, marsh land raised and drained, and extensive oiling of tanks, drains, and pools carried out; 77,096 houses were inspected, and 777 persons fined for having larvæ on the premises; everything appears to have been done after the outbreak that sanitary science could suggest. Some excellent by-laws passed by the Cape Coast Town Council for dealing with mosquito larvæ were unfortunately considered by the Attorney-General to be *ultra vires;* but an ordinance providing for the destruction of mosquitoes throughout the colony is under consideration by the legislative council. The writer of the sanitary report confesses that the interest taken by Europeans, especially by non-officials, has not been encouraging; whilst that of the native "may be written down as *nil*." He recommends that the drainage of swamps in and around large towns should be taken in hand, a reasonable sum being voted annually for that purpose; he also makes the rather radical suggestion that quinine should be compulsorily administered to school children and the children of officials.

The medical officer of the Bechuanaland Protectorate reports that the clearing of bush, introduction of mosquito-proof quarters, and attention to general cleanliness have almost rid Gaberones of the mosquito pest that formerly made life at the station one long disease; while the free use of quinine and bark has completely changed the physical and mental tone of the service in all ranks; fever cases are rare, and deaths from this cause unknown. Mosquito destruction is carried out in Southern Nigeria, but according to the returns malaria is not very prevalent. In Uganda anti-mosquito measures have been adopted and quinine distributed.

West Indies.

In the West Indies the distribution and amount of malaria vary considerably. Thus, in Barbados there are no anophelines and no indigenous malarial fever; anti-mosquito rules are, however, rigorously carried out, every house being supposed to be inspected once a month. In British Guiana quinine is regularly distributed, the children of East Indian immigrants are examined and anti-malarial measures systematically adopted. The superintending medical officer in Jamaica points out the special difficulties there existing in regard to mosquito destruction, due to the presence of trenches dug for the draining of banana plantations and irrigation channels; in many cases these are close to villages and towns; the prohibition of banana cultivation near to these inhabited areas may become advisable. Dr. C. A. Moseley, of Port Antonio, contributes almost the only note of hesitation as to acceptance of the generally recommended measures of hut screening against mosquitoes and preventive distribution of quinine. Referring to the former, he alludes to the protection afforded to the scientific observers who sojourned in the Roman Campagna in mosquito-proof huts, but doubts the applicability of this practice to the protection of exposed persons in general—e.g., the police. He does not seem to be aware that this has been proved to demonstration by the experience of railway employees, customs officers, and others in Italy, who, by the proper use of screened houses, verandahs, &c., have shown that it is quite possible to live and carry out their duties in a malarious district during the fever season. As to quinine administration, he states that a cinchonised coolie who contracts malaria has a longer and more severe attack; he did not find any diminution in the number of enlarged spleens after regular administration of quinine.

Blackwater Fever, &c.

Blackwater fever is referred to in Gambia (4 cases, 2 deaths), in Southern Rhodesia (where it caused 37 deaths), in Southern Nigeria (35 cases, 8 deaths), in Uganda (9 cases), in British Guiana (7 deaths), in Mauritius (1 death), and in Straits Settlements (1 case). Yellow fever has already been mentioned in reference to the Gold Coast; it did not occur elsewhere. Filariasis is recorded in several colonies, especially Mauritius, Southern Nigeria, British Guiana, Antigua, and St. Kitts-Nevis. In the East African Protectorate the medical officer at Lamu states that, so far as his observation had gone, over 40 per cent. of the inhabitants of Lamu show filaria in the blood. The only reports of dengue are from Straits Settlements (46 cases) and Uganda (2 cases).

Laboratory Researches.

In other appendices are given reports of laboratory researches at home and abroad, from which one or two points of especial importance may be noted. As to transmission of trypanosoma, Professor E. A. Minchin distinguishes between contaminative transmission (in which the vertebrate acquires the infection, as it were, accidentally, by eating substances containing the parasite, which so passes into the digestive tract of the vertebrate, and thence into the blood) and inoculative transmission (in which the parasite, having completed its developmental cycle in the invertebrate blood-sucking host, is inoculated by the invertebrate into the blood of the vertebrate host). The latter mode of transmission is exemplified in the classical instance of malarial fever. An example of the former is afforded by a hæmogregarine found in the leucocytes of the rat, which is taken up by a blood-sucking mite, within whose body it passes through a developmental cycle. The ripe form can only pass back into the rat if the rat eats the mite that sucked the blood that contained the gregarine. Professor Minchin established that infection could be conveyed from rat to rat by inoculative transmission through the flea, and regards this as the normal mode. Rats can also become infected by eating infected fleas, but this in Professor Minchin's opinion (contrary to that of Mr. C. Strickland, of the Quicke Laboratory) is only an exceptional occurrence. Trypanosomes are not apparently transmitted from parent to offspring in the fleas. As to the habitat of the trypanosome within the body of the flea, the ripe form was found chiefly in the stomach, sometimes in the hindgut, but never in the salivary glands of the insect. Dr. H. M. Woodcock summarises his researches on Halteridium and Trypanosomes.

Dr. C. M. Wenyon, working at Bagdad and Aleppo, showed that the incubation period of oriental sore is about two months. Transmission by the bed bug he considers untenable. Oriental sore is not nearly so common in Aleppo as in Bagdad, whereas the bug is rarely met with in Bagdad, but is universally prevalent in Aleppo.[2] Experiments as to transmission were made with Phlebotomus flies, but so far with negative results. Professor R. Newstead contributes a note on the Classification of Glossina. Dr. J. W. W. Stephens criticises Sir D. Bruce's method of measuring trypanosomes, and suggests a modification.

Treatment of Malaria.

Dr. D. Thomson records a study of 81 cases of malaria, in which careful detailed observations were made of the blood conditions, especially of the effect of quinine on the parasites. He concludes that it is bad practice to give the drug in small doses of 5 grains daily, or irregularly even if the dose be large; for such treatment tends to increase the power of crescent formation. He advises 20 to 30 grains daily from the beginning; such treatment renders infective cases non-infective to mosquitoes in three weeks. No true relapses occurred. After three days' treatment with 10 grains thrice daily

[2] THE LANCET, March 16th, 1912, p. 743.

the sexual parasites were destroyed. We consider this to be a very valuable contribution to rational therapeutics, and one that should be studied by all practitioners in the tropics, though some patients may not be able to stand 30, or even 20, grains daily for long.

Other Reports.

Among reports from Colonial laboratories, Mr. E. C. Long, of Basutoland, relates a case of apparent transmission of leprosy by infected bugs. He also found in bugs that had bitten lepers a bacillus resembling B. lepræ. Dr. K. S. Wise and Dr. E. P. Minett, in British Guiana, show that Musca domestica can carry about leprosy bacilli on the feet and body, and that these bacilli remain in the flies' intestines for several days, and can be detected in the fæces practically unchanged after ten days. From Guiana also comes a report on nastin and benzoyl chloride in the treatment of leprosy. A solution of the latter in petroleum oil is recommended as a nasal spray and for painting ulcerated surfaces; it quickly frees the discharge from bacilli. Nastin is apparently of little benefit.[3] Dr. A. T. Stanton contributes further accounts of beri-beri investigations at Kuala Lumpar. In addition to facts previously recorded, he states that unpolished rice that has been heated to 120° C. for two hours causes polyneuritis in fowls, the protective substances being therefore destroyed by this degree of heat. They are soluble in 0·3 per cent. hydrochloric acid solution, and in proof spirit containing 0·12 per cent. HCl, also in a slightly acidulated 91 per cent. alcohol solution. Exclusive of glucose, they amount to not more than 11·3 per cent. by weight of the rice polishings, or 1·13 per cent. of the original rice grain. In this fraction are included protamine (alcohol-soluble protein) and compounds of calcium, magnesium, and phosphorus; but the exact chemical nature of these substances is unknown. The use of unpolished, or under-milled rice is recommended; also the parboiling of rice, as advocated by Dr. Braddon, since by so doing the outer layers of the grain are hardened and their removal in milling rendered less easy. The cooking of rice by steam under pressure should be prohibited.

Dr. L. Nicholls contributes an interesting report on work in St. Lucia, including a study of yaws, in the causation of which he incriminates a large fusiform bacillus, and a small fly, which he defines and figures, and believes to be the carrier of the specific infection. The preventive measures he recommends are strict isolation of cases, their thorough treatment, careful watching of all discharged cases and for chronic carriers, and disinfection of clothing and dwellings. Anti-malarial measures were vigorously carried out in various parts of the island, and comparing the results obtained by applying kerosene to water tanks and marshes and by the stocking of pools, marsh drains, &c., with "millions," Dr. Nicholls believes that in most cases the fish are equally efficacious and will last longer; besides which they cost nothing once they are established, since they multiply themselves after they have become neutralised in the pools and live upon the anopheline larvæ. Ankylostomiasis is prevalent in the island. Dr. Nicholls found that either drying or the sun's rays quickly destroy ankylostoma ova or larvæ; also the majority of cases presenting serious symptoms are self-infectious.

We have not been able to bring all the reports in this volume under consideration. From the few notes here put together some impression may be obtained of the scope and variety of the work carried on in our various colonies and dependencies in the tropics. There will be a general agreement with the opinion of the Advisory Committee that "the experiment of setting up these laboratories has fully justified itself, and that it deserves all possible encouragement." *Quæ regio in terris nostri non plena laboris?*

[3] THE LANCET, March 30th, 1912, p. 881.

UNIVERSITY OF LIVERPOOL: SCHOOL OF HYGIENE.—The annual examination in sanitary science was held on April 24th and 25th. A total of 41 candidates presented themselves for examination. Seven women and 16 men satisfied the examiners, and will be awarded a certificate of sanitary knowledge enabling them to act as inspectors of nuisances and sanitary inspectors.

ANNUAL REPORT FOR 1910 OF THE MEDICAL OFFICER OF HEALTH OF THE ADMINISTRATIVE COUNTY OF LONDON.

I.

WHEN acknowledging, a fortnight ago,[1] the receipt of Sir Shirley Murphy's closing official report we alluded to the reorganisation of the County Council's Public Health Department then in progress—an incident which may probably account for the late appearance of the volume. We hope that for the future the report on the public health, including the medical aspects of public education, may be published in a form befitting its importance, instead of being interpolated like the present report as a mere section of a volume which in other respects is of limited general interest.

Population of the Administrative County.

Estimated to the middle of 1910, the population of the county of London was 4,532,545—this number being obtained by the application of a finite difference formula to the enumerated totals at the last four Censuses. Ratios of increase or of decrease of population are affected by differences in the age and sex constitution of the living, as well as by the relative amount of emigration and immigration, a fact which must be remembered in comparing crude figures. The natural increase of the population of the County of London (the balance between births and deaths) in 1901–10 has not been sufficient to compensate for the loss by the outward movement of the population. Even the area of Greater London has lost nearly a quarter of a million of its population during the last decade, three-fourths of which loss is believed to have occurred within the latter half of that period.

Natality in 1910.

The steady decline in the London birth-rate noted in previous years has continued, the birth-rate in 1910 being the lowest recorded in London since the establishment of civil registration. A similar decline in England and Wales generally is recorded in the reports of the Registrar-General. In an interesting diagram the birth-rates in each successive year since 1850 are compared with the mean birth-rate in 1851–1910. In studying this diagram it should be noted that as the registration of births was not compulsory until 1875, many of the births occurring before that year probably escaped registration. Compared with the birth-rate of 1870–72 the London rate of 1910 decreased by 28 per cent. when calculated on the population at all ages, the decrease being equal to 31 per cent. when computed on the female population between the ages of 15 and 45 years. The birth-rates of several of the London sanitary districts are considerably affected by the presence of lying-in institutions within the municipal boundaries. Accordingly, in calculating the district rates since 1885, the births of the children of mothers ordinarily residing outside London have been excluded. When the district rates of birth, in terms of married females of child-bearing age, are compared the differences are enormous; the proportions varying from 12·9 per 1000 in the City of London to exactly double that rate in Bethnal Green. It is satisfactory to observe that the illegitimate birth-rate, computed on the unmarried and widowed female population aged 15–45 years, has declined since 1870–72 by 45 per cent.

Notification of Births Act.

In all the London sanitary districts save one advantage is taken of the exceptional powers provided by the Act of 1907 to secure prompt notification of the births of infants within a few hours of their occurrence, instead of awaiting the information of their registration for the statutory period of several weeks. In a table the number of births thus notified in each sanitary district during 1910 is compared with the number registered, and the number of still-births is given. From this it appears that of the total births reported the still-births amounted to rather more than 2 per cent.

In the early part of 1911 Dr. W. M. Wanklyn, of the County Council's medical staff, made inquiry as to the measures

[1] THE LANCET, April 20th, 1912, p. 1068.

adopted in the several London districts under the powers of the Notification of Births Act. From this it appears that the borough of Islington is the only one in which no advantage has hitherto been taken of the Act. The medical officer of health of that district has, however, strongly urged upon his authority the need for the services of health visitors to attend to the poorer class of mothers and their children at and after their confinement period. In the majority of cases the reports of medical officers of health show that considerable effort is being made to ensure the proper feeding and care of infants by visiting the houses in which the births have occurred. In two-thirds of the London districts "consultation centres" have been established to which infants can be taken for medical supervision and treatment; and in about one-third of the districts steps are taken to assist in the proper feeding of expectant and nursing mothers. In all but one of the districts either female sanitary inspectors or else health visitors are employed, by whom the infants (and their mothers) are promptly visited after receipt of notification. The proportion to total births reported of visits thus recorded vary from 5 per cent. in the borough of Stepney to 73 per cent. in Paddington, 75 per cent. in Hammersmith, 80 per cent. in St. Marylebone, and 100 per cent. in the City of London. The special work now inaugurated in London, and apparently generally carried out under the provisions of this Act, is certain to produce permanent results for the preservation of infant life.

Mortality in London and in its Several Districts.

The general mortality for London as a whole has already been dealt with by the Registrar-General in his annual summary, but Sir Shirley Murphy furnishes in his report much information of a special character which is not contained in the national record. The death-rate of the Administrative County of London in each year since 1840, in relation to the mean death-rate in the period 1841–1910, is shown in an instructive diagram, which reveals the fact that the general death-rate in 1910, after the most complete practicable correction, is considerably lower than in any other year since the commencement of civil registration. With the help of a life table the mean death-rate obtaining in London at the several age-periods and in each sex is shown for the decennium 1891–1900 and for the year now under notice. The figures for 1910 are fully corrected for institution deaths, and the rates for the decennium ended in that year are based on figures which have been corrected according to the experience of the four years 1897–1900. A full discussion of this method of correction will be found in Sir Shirley Murphy's report for 1901 which accompanied the London life table published in that year. By this table it appears that the rate of mortality in 1910 was considerably lower than that of the decennial period ended in 1900, at each age-period and for each sex, except at the period 85 and upwards. The life table has been further employed to show the effect on the community of fluctuations of mortality. The advantages of this method were set out in detail in the report for 1901 above referred to. In order to apply this method it is necessary to ascertain from the life table the mean future lifetime of males and females in groups of ages corresponding to the age-groups to which the deaths relate. In another table contained in the report the number of deaths registered in 1910 are compared with the number that would have occurred if the death-rates of the period 1891–1900 had been maintained in the year 1910. The number of lives saved is expressed in terms of "life-capital" which is obtained by applying the future lifetime figures to the lives saved at each period of ages. From the preceding table it is clear that in the year under notice not fewer than 25,179 lives have been saved (as compared with the decennium 1891–1900), and that this salvage represents a gain to the community of 1,050,489 years of "life capital."

Epidemic or Common Infectious Diseases.

In the year under notice measles was the only common infectious disease that showed exceptional prevalence as compared with recent previous years, the deaths from small-pox, whooping-cough, scarlet fever, diphtheria, and enteric fever being below the average.

Of all the diseases of this class measles seems to have given more trouble to the sanitary and education authorities in 1910 than any other infantile disorder, and for this reason exceptional space is devoted to its consideration in this report.

Among preventive measures for the limitation of infections amongst school children nearly all the medical officers of health report the closure of class rooms, or the exclusion of children under five years old who had not been protected by a previous attack. In most districts the homes of the patients are visited by women sanitary inspectors or by health visitors for the purpose of ensuring reasonable precautions against the spread of infection. Many of the health officers advocate the raising the age-limit of school attendance so as to exclude children under 5 years of age on account of the frequency with which measles spreads at that early age. But in this connexion it may be contended that even if children were kept at home it by no means follows that any large proportion of those now infected through school attendance would ultimately escape attack by measles, although it is obvious that whatever leads to the aggregation of children must increase the tendency to infection at a period of life when the fatality of measles is the highest.

Scarlet Fever and Diphtheria in Relation to School Attendance.

For many years past attention has been frequently drawn to the remarkable decrease in the prevalence of scarlet fever and diphtheria which has been observed in the school holidays in August. As long ago as the year 1894 the question was discussed whether this increase were due to exodus at the time of the summer holiday, but no reason was found for assuming this to be the case. It was pointed out that the decrease of cases notified among children of school age began about a week subsequently to the closure of the schools; and that a week later still a smaller decrease occurred among children under school age, and a week still later among persons above school age, and the suggestion was offered that the diminished prevalence of infection amongst other sections of the population depended on lessened infection from the school children. About a week after the opening of the schools increase has invariably occurred in the number of cases notified. On the theory that exodus from London had been a dominant factor in diminishing the prevalence of scarlet fever and diphtheria, it might have been expected that the amount of decrease would not differ widely from year to year. But from a table which shows the number of attacks notified during the months of holiday influences, and also during the month following, we observe wide differences in this respect. If exodus were really the main factor in this diminution it would have been difficult to account for the fact, among others derivable from the tables, that in the year 1896 exodus should in the main account for an August decrease of 2·9 per cent., and in 1906 for a decrease of 28·8 per cent. in cases of scarlet fever; or for a decrease in 1900 of 32·3 per cent., and in 1892 for a decrease of 3 per cent. only, in cases of diphtheria. Similar differences are observable in the increase which occurs after the close of the holidays, which is about a week after the re-opening of the elementary schools. In refuting a further attempt to explain the diminution of notification in the holidays by assuming the non-discovery of cases, Sir Shirley Murphy remarks that "to whatever extent this loss may have had effect upon the figures of notified cases, it is obvious that it would not have affected those relating to registered deaths," and the August depression in the mortality curves for scarlet fever and diphtheria published in the annual summary of the Registrar-General definitely negatives the suggestion that the conjoint depression in the case curves is materially affected by this cause."

(To be concluded.)

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

MEETING OF COMITIA.

A COMITIA was held on April 25th, Sir THOMAS BARLOW, Bart., K.C.V.O., the President, being in the chair.

The following gentlemen having passed the required examination were admitted Members of the College:—Trevor Berwyn Davies, M.D. Lond., L.R.C.P.; Owen Lambert Vaughan Simpkinson de Wesselow, M.B. Oxon.; Arthur Charles Douglas Firth, M.B. Cantab., L.R.C.P.; Thomas Howard Foulkes, L.R.C.P., Major I.M.S.; George

Herbert Hunt, M.B. Oxon.; and Charles Edgar Lea, M.D. Vict.

Licences to practise physic were granted to 96 gentlemen who had passed the necessary examinations.

The following Members who had been nominated by the Council were elected Fellows of the College: William Bain, M.D. Durh. (Harrogate); Edward John Cave, M.D. Lond. (Bath); Robert Briggs Wild, M.D. Lond. (Manchester); Henry John Davis, M.B. Camb.; John Roger Charles, M.D. Camb. (Clifton, Bristol); Frank Charles Shrubsall, M.D. Camb.; and Arthur John Jex-Blake, M.P. Oxon. Charles Scott Sherrington, M.D. Camb., F.R.S. (Liverpool), who had been nominated by the Council under By-law LXXI. (*b*), was also elected a Fellow.

A silver cup and an M.D. Lond. gown, formerly belonging to the late Sir William Allchin, M.D., were received as a gift from Lady Allchin, and the thanks of the College were returned to Lady Allchin.

The following communications were received: 1. From the secretary of the bicentenary festival of the Medical School, Trinity College, Dublin, asking the College to send two representatives to the festival to be held July 4th to 6th next. The President and the treasurer (Sir Dyce Duckworth) were nominated. 2. From the secretary of the Royal College of Surgeons of England, reporting proceedings of the Council of that College on April 11th.

After some further formal business the PRESIDENT dissolved the Comitia.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

City of Aberdeen.—Professor Matthew Hay's last annual report, though technically relating to 1910, deals with several matters of later date, including a number of questions arising out of the Census determination in 1911. The figures provisionally issued from the Registrar-General's office after the Census were found to be incomplete as regards the Aberdeen population engaged on steam fishing vessels and an additional local enumeration was made of the omitted crews. With this addition the Census population of the city became 163,877. Including an asylum and poorhouse outside the city boundaries Professor Hay reckons the 1910 population at 164,800. As elsewhere in Scotland, the rate of increase of population in the city has diminished, being in 1911 only 7·6 per cent. in excess of the previous Census, as compared with 22·9 per cent. in 1901. The birth, death, and marriage rates for 1910 were respectively 26·2, 14·2, and 8·0. Discussing the last of these rates Dr. Hay points out that marriages registered in a particular town are often far from representing the number of persons commencing their married life in the town. Country people often come to the city to be married and go away again, and in 1910 when those marriages were deducted in which neither party belonged to the city, the rate was reduced from 8·0 to 6·7. Much progress has been made in organisation to deal with infant mortality, in consequence of the adoption of the system of birth notification in 1909. An appendix to the report gives the result of a special series of inquiries into the still-births which were reported to the health department during 1910. The figures are small, relating only to 193 still-births, but if the investigations are continued some valuable statistical results should be obtained, while already some useful indications are supplied. The probable total number of still-births in the city was 1 to every 23 total births, or about 44 per 1000. If the still-births between the sixth and seventh month are included, this proportion is raised to 47 per 1000. Of 63 infants of known sex believed to be alive at the commencement of parturition, 35 were males and 28 were females, whereas of 114 infants of known sex believed to be dead before the commencement of parturition 55 were males and 59 females. The excess of females was almost entirely among infants born at the seventh month. In half of the births in which the child was alive at parturition its death was attributed to difficult labour arising from contracted pelvis or some other cause. Although contracted pelvis is usually associated with the result of rickets and malnutrition, it was found that the still-births of both groups were relatively less frequent among poorer-class than among better-class mothers. About one-third of the still-births occurred during a first pregnancy; these again preponderated among mothers in better-class households. The report contains some instructive statements of the mortality from different causes in different towns in Scotland. Aberdeen takes a satisfactorily low place in regard to pulmonary tuberculosis and pneumonia; on the other hand, it shares with other east coast towns of Scotland a higher death-rate from malignant disease than towns on the west coast. Professor Hay's figures on this point per 10,000 population and corrected for the Census are as follows:—

MALIGNANT DISEASE.

East Coast Towns.

	1907.	1908.	1909.	1910.	Yearly average.
Edinburgh ...	10·8	11·6	11·7	12·1	11·6
Leith	9·5	12·5	13·7	12·1	12·0
Dundee	9·6	10·5	10·9	9·7	10·2
Aberdeen ...	11·1	10·9	11·1	9·8	10·7
(Average) ...	10·3	11·4	11·9	10·9	11·1

West Coast Towns.

Glasgow	7·8	8·5	8·9	9·3	8·6
Govan	6·3	6·4	6·5	7·4	6·7
Partick	9·4	8·0	7·5	10·1	8·8
Paisley	8·4	6·7	9·1	7·6	8·0
Greenock ...	11·3	7·7	7·9	10·3	9·3
(Average) ...	8·6	7·5	8·0	8·9	8·3

The compulsory notification of measles and whooping-cough was abandoned in Aberdeen in 1903, the evidence not showing that the measures based on notification produced any very perceptible reduction in the prevalence of these diseases. During the notification period, however, useful facts were collected as to the incidence and fatality of measles. From ten years' notification figures, relating to some 2400 cases, Professor Hay states that under two years of age the measles case mortality was 1 in every 10 cases; from two to five, 1 in 64; and above 5, 1 in 260. These figures have an important bearing on the removal of measles cases to isolation hospitals, for with this disease the chief justification of the removal of a case is that the hospital conditions will give a better chance of life to the patient. It is the child under two, under unsatisfactory home conditions, to whom the better treatment available in the hospital should be of most advantage. Since the year under review Aberdeen has suffered from a severe epidemic of measles, nearly 5000 cases being known to the health department in the last quarter of 1911. One of the large pavilions of the city hospital was then made available for the treatment of young children, and special efforts were made to select those of the youngest age. The report mentions several interesting matters of sanitary administration. Reference may here be made to the position of the water-supply. By the defeat two years ago of the scheme to take water from the River Avon the city has lost an opportunity of securing one of the purest public supplies available in the Kingdom, and now that it must still depend upon the River Dee special methods of purification must be adopted to ensure safety. Professor Hay points out that some care is necessary in applying the results obtained by storage of Thames water to water of a different natural character and with less initial pollution. A satisfactory account is given of the slaughter-house inspection and its results. Cards are used to give an exact record of the condition of each carcass seized as unsound; they contain on one side an outline of the carcass, and the meat inspector is instructed to shade diseased parts, mark diseased glands, and to circle the parts of the carcass which are seized. Cards of this kind should be found very useful by health officers generally. Among offensive trades considerable difficulty seems to be experienced in preventing objectionable nuisances during the preparation of oil from fish livers, many of which are distinctly putrid before being brought to Aberdeen by the trawlers. A genuine cod-liver oil factory, on the other hand, appears to use only fresh livers, and to be able to carry on the business of extracting the oil without creating nuisance. Professor Hay urges an amendment of the law to enable a local authority to restrict its sanction to the establishment of an offensive trade by specifying the

particular parts of the business which are to be regulated or prohibited. This is already the case, we believe, under the English Public Health Acts.

Borough and Rural District of Reigate.—Diphtheria in former years was regarded, on good grounds, as a disease which was relatively more prevalent in rural districts and in isolated communities than in the towns. Dr. A. E. Porter, however, when dealing with diphtheria in the Reigate rural district at the present day, considers that the disease, which shows no tendency to decrease, is maintained by frequent fresh importations of infection from outside areas where diphtheria is constantly present. Much detailed work has been undertaken during 1911, both in the borough and in the rural district, in connexion with reported or suspected diphtheria. Carriers have been systematically looked for in the schools. Attention has been primarily directed to nasal discharge and the results of nasal swabbing, on the view that infection is most frequently maintained by this class of case. The results in one or two instances have been disappointing, as diphtheria has reappeared notwithstanding all that has been done; but having regard to the numerous uncertainties which still exist in the interpretation of bacteriological results obtained from swabs, and to the distinction which has to be made between virulent and non-virulent diphtheria bacilli, uniform success can hardly be looked for. In the rural report Dr. Porter gives an interesting account of a case of diphtheritic infection of the skin, which was traced during a search for a carrier, and may have acted as an infecting agent. The case was that of a woman who had suffered from chronic eczema every winter since 1907. In 1910 and 1911 the hands were affected and some patches appeared near the ear, from which there was a clear discharge. Swabs from a pustule on the wrist and from the ear discharge yielded diphtheria bacilli, which were ascertained at the Lister Institute to be fully virulent to guinea-pigs. Nasal and faucial swabs gave negative results.

Inspection of houses for the discovery of sanitary defects or conditions calling for closing orders has been made in both districts. It appears, however, that the provisions of the Housing and Town Planning Act of 1909 have for one reason or another not been utilised. No action has been taken by the rural council on representations from the Local Government Board that workmen's cottages should be provided. It would obviously be useful for local authorities in this part of Surrey to think out town-planning schemes where building is proceeding rapidly. The reports, however, mention only a single planning scheme, at Horley, which the rural council refused to entertain. The parish council has appealed to the Local Government Board in the matter. The town council of Reigate is to be commended for having instituted a veterinary inspection of all cows kept in the borough, which is carried out quarterly and has already had satisfactory results. Unfortunately the usual story has also to be told: the neighbouring rural district, whence much of the Reigate milk is derived, will not participate in the arrangement, and, as Dr. Porter observes, the action of the town will very likely cause an increase in the tuberculous animals in the rural district, since under existing powers a tuberculous animal can easily be sold to a cowkeeper outside the area of supervision.

Borough of Guildford.—Dr. R. W. C. Pierce refers to the nuisance and danger to health which is caused by the business of carpet-beating being carried on in close proximity to dwellings. He considers it doubtful if the offence can be dealt with under the nuisance clauses of the Public Health Acts, although when carpet-beating is systematically carried on in yards or passages at the back of houses it should be in the power of local authorities to stop the practice, either under these clauses or under those relating to offensive businesses. The town council has satisfied itself that there is a scarcity of cheap cottages of under 6*s.* 6*d.* a week rent, and that private enterprise cannot be expected to supply the want. The provision of 20 cottages has already been agreed to, and further provision is to be made. A further housing extension has occurred by the development of a "garden estate" to the north of the town. Dr. Pierce points out that the craze of building cheap cottages in pairs often leads to waste of money, as well as to the erection of ugly buildings. There is more scope for better housing at the same cost by providing cottages in blocks of four.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 95 largest English towns having an estimated population of 17,639,816 persons in the middle of this year, 8711 births and 4764 deaths were registered during the week ending April 27th. The annual rate of mortality in these towns, which had been 14·0, 14·0, and 14·5 per 1000 in the three preceding weeks, declined to 14·1 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate in the 95 large towns averaged 14·2 per 1000, and was 0·6 per 1000 in excess of the average death-rate recorded in London during the same period. The annual death-rates in the several towns last week ranged from 5·6 in Ilford, 5·9 in Reading, 6·1 in Acton, 7·7 in Bournemouth, and 7·8 in Oxford, to 19·6 in Lincoln, 19·7 in Salford, 19·9 in Warrington, 20·0 in Newport (Mon.), and 20·5 in Bootle.

The 4764 deaths from all causes in the 95 towns were 129 fewer than the number in the previous week, and included 400 which were referred to the principal epidemic diseases, against 386 and 424 in the two preceding weeks. Of these 400 deaths from the principal epidemic diseases, 149 resulted from measles, 146 from whooping-cough, 44 from infantile diarrhœal diseases, 35 from diphtheria, 15 from scarlet fever, 10 from enteric fever, and 1 from small-pox. The mean annual death-rate from these diseases last week was equal to 1·2 per 1000, against 1·1 and 1·3 in the two preceding weeks. The deaths attributed to measles, which had been 131, 121, and 164 in the three preceding weeks, declined to 149 last week, and caused the highest annual death-rates of 2·0 in Blackburn, 2·2 in Salford, 2·5 in Rotherham and in Cardiff, 3·2 in Merthyr Tydfil, and 4·3 in Newport (Mon.) The deaths referred to whooping-cough, which had been 162, 146, and 149, were 146 last week; the highest annual death-rates from this cause were 1·3 in Salford and in Rhondda, 1·4 in Smethwick and in South Shields, 1·5 in East Ham, 1·6 in Barrow-in-Furness, 1·8 in Darlington, and 2·1 in Gloucester. The fatal cases of diarrhœa and enteritis among children under 2 years of age, which had declined from 69 to 40 in the five preceding weeks, slightly rose to 44 last week, and included 16 in London and its suburban districts, 3 in Nottingham, 3 in Liverpool, and 3 in Leeds. The deaths attributed to diphtheria, which had declined from 56 to 31 in the four preceding weeks, rose to 35 last week; 5 deaths from this cause were recorded in London, and 2 each in Ipswich, Birkenhead, Liverpool, Manchester, and Sheffield. The deaths referred to scarlet fever, which had been 24, 16, and 22 in the three preceding weeks, declined to 15 last week, and included 2 in Birmingham and 2 in St. Helens. The fatal cases of enteric fever, which had been 17, 13, and 17 in the three preceding weeks, declined to 10 last week, of which number 2 were recorded in Manchester. The death from small-pox occurred in Bristol.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had steadily decreased from 1384 to 1236 in the six preceding weeks, had further declined to 1223 on Saturday last; 144 new cases of this disease were admitted to these institutions during the week, against 121, 119, and 142 in the three preceding weeks. The 1156 deaths from all causes recorded in London were 84 fewer than the number in the previous week, and were equal to an annual death-rate of 13·3 per 1000. The deaths referred to diseases of the respiratory system, which had been 236, 227, and 245 in the three preceding weeks, declined to 223 last week, and were 45 below the number in the corresponding week of last year.

Of the 4764 deaths from all causes in the 95 towns, 189 resulted from different forms of violence and 366 were the subject of coroners' inquests. The causes of 29, or 0·6 per cent., of the deaths registered last week were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Leeds, Bristol, West Ham, Bradford, Hull, Newcastle-on-Tyne, Stoke-on-Trent, and in 75 other smaller towns. The 29 uncertified causes of death included 10 in Birmingham, 5 in Liverpool, 3 in Southend-on-Sea, and 3 in Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 18 largest Scotch towns, with an aggregate population estimated at 2,182,400 persons in the middle of this year, 1325 births and 679 deaths were registered during the week ending April 27th. The annual rate of mortality in these towns, which had been 16·6 and 16·1 per 1000 in the two preceding weeks, was equal to 16·2 per 1000 in the week under notice. During the first four weeks of the current quarter the annual rate of mortality in these towns averaged 16·3 per 1000, and was 2·1 per 1000 in excess of the rate recorded during the same period in the 95 large English towns. The annual death-rates in the several Scotch towns last week ranged from 8·1 in Govan, 8·8 in Motherwell, and 9·0 in Clydebank, to 20·2 in Perth, 21·8 in Ayr, and 22·5 in Kilmarnock.

The 679 deaths from all causes were 4 in excess of the number in the previous week, and included 65 which were referred to the principal epidemic diseases, against 82 and 74 in the two preceding weeks. Of these 65 deaths, 32 resulted from measles, 12 from whooping-cough, 12 from from infantile diarrhœal diseases, 5 from scarlet fever, and 4 from diphtheria, but not one from enteric fever or from small-pox. These 65 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·6 per 1000, or 0·4 per 1000 above that recorded in the 95 large English towns. The deaths attributed to measles, which had been 42, 49, and 41 in the three preceding weeks, again declined to 32 last week, and included 10 in Edinburgh, 6 in Glasgow, 4 in Dundee, 3 in Leith, and 3 in Coatbridge. The deaths referred to whooping-cough, which had been 10, 11, and 18 in the three preceding weeks, declined to 12 last week; 5 deaths were recorded in Glasgow, 3 in Edinburgh, and 2 in Aberdeen. The fatal cases of diarrhœal diseases among infants under two years of age, which had steadily decreased from 16 to 3 in the five preceding weeks, rose to 12 last week, and included 6 in Glasgow. The 5 deaths attributed to scarlet fever were 1 in excess of the average in the three preceding weeks, and comprised 2 in Glasgow, 2 in Greenock, and 1 in Dundee. The deaths referred to diphtheria, which had been 9 and 8 in the two preceding weeks, declined to 4 last week.

The deaths attributed to diseases of the respiratory system, which had been 106, 103, and 106 in the three preceding weeks, were 104 last week; and 27 deaths resulted from different forms of violence, against 17 and 19 in the two previous weeks.

HEALTH OF IRISH TOWNS.

In the 22 town districts of Ireland, having an estimated population of 1,157,014 persons in the middle of this year, 692 births and 450 deaths were registered during the week ending April 27th. The annual rate of mortality in these towns, which had risen from 20·9 to 23·3 in the three preceding weeks, declined to 20·3 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate in these Irish towns averaged 21·4 per 1000; in the 95 large English towns the mean annual death-rate did not exceed 14·2; while in the 18 Scotch towns it was equal to 16·3 per 1000. The annual death-rates in the several Irish towns last week were equal to 23·6 in Dublin (against 13·3 in London), 18·0 in Belfast, 17·7 in Cork, 25·5 in Londonderry, 17·7 in Limerick, and 13·3 in Waterford, while in the 16 smallest of these Irish towns the mean rate was equal to 19·3 per 1000.

The 450 deaths from all causes in the 22 Irish towns were 68 fewer than the number in the previous week, and included 45 which were referred to the principal epidemic diseases, against 40 and 42 in the two preceding weeks; of these 45 deaths, 16 resulted from measles, 13 from diarrhœal diseases, 10 from whooping-cough, 3 from diphtheria, 2 from enteric fever, and 1 from scarlet fever, but not one from small-pox. These 45 deaths from the principal epidemic diseases were equal to an annual death-rate of 2·0 per 1000; the death-rate from these diseases last week in the 95 large English towns did not exceed 1·2 per 1000, while in the 18 Scotch towns it was equal to 1·6 per 1000. The deaths attributed to measles, which had been 11, 14, and 13 in the three preceding weeks, rose to 16 last week, and comprised 15 in Dublin and 1 in Clonmel. The deaths referred to diarrhœal diseases, which had been 6, 11, and 10 in the three preceding weeks, rose to 13 last week, all but one of which were of infants under two years of age; 8 deaths were recorded in Dublin and 2 in Belfast. The fatal cases of whooping-cough, which had declined from 17 to 7 in the three preceding weeks, rose to 10 last week, and included 4 in Belfast and 2 in Dublin. The 2 deaths referred to enteric fever and the fatal case of scarlet fever were registered in Dublin.

The deaths referred to diseases of the respiratory system, which had been 135 and 118 in the two preceding weeks, further declined to 104 in the week under notice. Of the 450 deaths from all causes in the 22 Irish towns 158, or 35 per cent., occurred in public institutions, and 11 resulted from different forms of violence. The causes of 14, or 3·1 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 95 large English towns the proportion of uncertified causes of death last week did not exceed 0·6 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

IN accordance with the provisions of Order in Council of April 1st, 1881, Staff-Surgeon Edward Bryan Kenny has been placed on the Retired List (dated April 15th, 1912).

The following appointments have been notified:—Fleet-Surgeons: V. G. Thorpe to the *Majestic*; F. Fedart to the *Hecla*; and H. W. Macnamara to the *King Alfred*, all on recommissioning. Staff-Surgeons: R. L. Dickinson to the *Tyne*, on recommissioning; and W. H. Sequeira to the *Black Prince*. Surgeons: W. L. Cowardin to the *King Alfred*, and S. H. Vickery and T. Cock to the *King Alfred*, for Second and Third Fleets; F. G. H. Black to the *Hecla*, on recommissioning; R. N. W. W. Biddulph to the *Tyne*, on recommissioning; C. G. Sprague to the *Crescent*, for voyage out, and to the *Dwarf*, on recommissioning; W. G. Edwards to the *Inflexible*; and G. R. McCowen to the *Crescent*, for voyage home.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Captains to be Majors (dated April 25th, 1912):—Robert L. Argles, John G. Foster, Francis S. Walker, Lydmar M. Purser, Farquhar McLennan, and James H. Robinson.

Surgeon-General H. R. Whitehead has taken up duty as Deputy Director of Medical Services, Eastern Command, in succession to Surgeon-General J. C. Dorman.

Colonel C. E. Nichol has been transferred from Maymyo, Burma, to Calcutta, for appointment as Principal Medical Officer of the Presidency and Assam Brigades.

Lieutenant-Colonel A. E. Tate has been transferred from Ambala Cantonment to Rawal Pindi, in command of the Station Hospital. Lieutenant-Colonel W. C. Beevor has been appointed to take over charge of the Royal Infirmary, Phœnix Park, in succession to Lieutenant-Colonel C. Birt, transferred to London as Expert in Tropical Medicine to the Advisory Board for Medical Services. Lieutenant-Colonel E. H. Lynden Bell has been granted leave of absence home from India until Nov. 13th next. Lieutenant-Colonel M. T. Yarr has been appointed Senior Medical Officer in the London Recruiting Area, in succession to Lieutenant-Colonel T. B. Winter, transferred to Colchester to hold charge of the Military Hospital.

Major W. E. Hardy, in charge of the Military Hospital at Caterham, has been placed under orders for service abroad during the coming trooping season. Major J. Tobin has been appointed Specialist in Midwifery and Diseases of Women and Children at Gibraltar. Major F. Kiddle has joined for duty in the Eastern Command. Major C. W. Reilly has arrived home for duty from India. Major J. H. E. Austin has been transferred from the London District to the Scottish Command for appointment as Medical Inspector of Recruits. Major L. Addams-Williams has taken over duty as Company Officer of the Royal Army Medical Corps at Tidworth. Major H. E. Winter has been transferred from Gravesend to the London District and appointed Deputy Surgeon at the Royal Hospital, Chelsea. Major G. J. Houghton has arrived home on duty from the West Coast of Africa. Major L. Way has joined the Station Hospital at Bareilly for duty. Major I. A. O. MacCarthy has been transferred from Hounslow to the London District.

Captain W. J. Weston, on arrival home from Gibraltar, has been appointed to the Cork District. Captain J. Fairbairn has arrived home for duty from the West Coast of Africa. Captain T. S. Blackwell has been appointed for duty in the Irish Command. Captain N. D. Walker has been placed under orders for service abroad during the coming trooping season. Captain J. A. Bennett has been selected for appointment as Specialist in Electrical Science to the Sixth (Poona) Division. Captain D. Coutts has been transferred from the Eighth (Lucknow) Division to the Seventh (Meerut) Division. Major S. H. Withers has taken up duty in charge of the Station Hospital at Dagshai, Simla Hills. Captain E. F. Q L'Estrange has been transferred from Bellary to the Convalescent Depôt at Wellington for duty. Captain W. MacD. MacDowall has been appointed to the London District. Captain A. J. Hull has taken up duty as Clinical Assistant at Queen Alexandra's Military Hospital. Captain M. F. Grant has been appointed Adjutant of the First (London) Division, Royal Army Medical Corps School of Instruction. Captain F. C. Sampson, on return from Potchefstroom, has been posted to the Military Hospital at Glasgow. Captain J. du P. Langrishe has been transferred from Poona to Kirkee. Captain R. J. Franklin has been appointed Officer in Charge of Troops at Fort Camden, Queenstown. Captain G. B. Edwards, on return from a tour of service at Mauritius, has been detailed for duty at the Military Hospital, Bulford Camp, Salisbury Plain. Captain F. L. Bradish has been appointed Staff-Surgeon at Jullundur and Civil Surgeon of the Cantonment. Captain H. A. Bransbury, specialist in dermatology and venereal diseases, has been appointed to the Station-Hospital at Ahmednagar, Bombay Presidency.

Lieutenants S. S. Dykes and P. S. Tomlinson on arrival in India for a tour of duty, have been posted to the Station Hospital at Lucknow for a course of instruction in Indian sanitation. Lieutenant J. K. Gaunt has joined for duty at Fermoy. Lieutenant D. Reynolds has been transferred from Cork to Limerick.

INDIAN MEDICAL SERVICE.

Lieutenant-Colonel E. Jennings, Bengal Presidency, has arrived home on leave of absence. The services of Lieutenant-Colonel H. Hendley, who has been employed on special duty in the office of Inspector-General of Civil Hospitals in the Punjab, have been placed at the disposal of the Home Department of the Government of India. Lieutenant-Colonel W. D. Sutherland, civil surgeon at Saugor, has been transferred in the same capacity to Jubbulpore, in succession to Major P. F. Chapman, who has been granted 18 months' leave of absence home from India. Lieutenant-Colonel F. J. Drury has been selected for appointment as Inspector-General of Civil Hospitals in the Provinces of Behar and Orissa. Lieutenant-Colonel J. T. Calvert has been selected for appointment as Principal of the Medical College at Calcutta. Lieutenant-Colonel R. W. S. Lyons has been granted an extension of his leave of absence home from India until May 20th. The services of Lieutenant-Colonel W. B. Bannerman have been placed at the disposal of the Home Department of the Government of India.

Major W. W. Clemesha has been selected for appointment as Sanitary Commissioner of the Presidency of Bengal. Major V. H. Roberts has relinquished charge of the office of plague medical officer at Rohtak, and has been appointed to the Central Research Institute at Kasauli for a course of instruction. Major H. J. R. Twigg has arrived home on leave of absence from India. Major G. T. Birdwood, civil surgeon at Mussooree, has been transferred to Lucknow for temporary duty. Major A. Hooton has been appointed to officiate as a Civil Surgeon of the First Class at Bombay during the absence on leave of Lieutenant-Colonel J. B. Smith. Major C. Milne has been transferred from Jhansi to Mussooree as Civil Surgeon. Major J. Hunt, agency surgeon in Nepal, has been transferred to Rajputana for special service under the Agent to the Governor-General. Major F. A. Smith, civil surgeon at Peshawar, has been selected to succeed Lieutenant-Colonel J. R. Roberts as Civil Administrative Medical Officer in Central India and Residency Surgeon at Indore. Major J. W. Grant has taken up duty in the Western States of Rajputana as Surgeon to the Residency.

Captain A. Whitmore has arrived home on leave of absence from India. Captain H. B. Scott, special plague medical officer in the Sagaing Division, has been invested with the powers of a Deputy Commissioner. Captain N. H. Hume, superintendent of the Central Jail at Montgomery, has been granted three months' privilege leave of absence. Captain C. A. Sprawson has taken up duty as Superintendent of the Lucknow Central Prison during the absence on leave of Captain I. M. Macrae. Captain T. C. McCombie Young has been appointed Deputy Sanitary Commissioner of the Assam Province. The services of Captain T. S. B. Williams have been placed at the disposal of the Foreign Department of the Government of India. Captain J. W. McCoy has been transferred from Dacca to Cachar, and appointed Civil Surgeon. Captain A. Cameron, plague medical officer, Delhi, has been transferred to Gurdaspur. Captain F. W. Sumner, civil surgeon at Farrukhabad, has been granted seven months' leave of absence home from India.

Lieutenant V. P. Norman has been granted six months' extension of his leave of absence home on the recommendation of a medical board.

TERRITORIAL FORCE.

Royal Army Medical Corps.

Lowland Mounted Brigade Field Ambulance, Royal Army Medical Corps: Frank Hauxwell to be Lieutenant (dated April 27th, 1912).

Notts and Derby Mounted Brigade Field Ambulance, Royal Army Medical Corps: Captain Oswald K. Wright resigns his commission (dated April 27th, 1912).

1st South-Western Mounted Brigade Field Ambulance, Royal Army Medical Corps: Lieutenant Arthur S. Gedge resigns his commission (dated April 27th, 1912).

3rd Northern General Hospital, Royal Army Medical Corps: George Henry Pooley to be Captain (dated Feb. 1st, 1912).

Lowland Mounted Brigade Field Ambulance, Royal Army Medical Corps: Lieutenant-Colonel Robert T. Halliday, on completion of his period of service in command, retires, and is granted permission to retain his rank and to wear the prescribed uniform (dated April 27th, 1912). Major Hugh W. Thomson to be Lieutenant-Colonel (dated April 27th, 1912).

1st North Midland Field Ambulance, Royal Army Medical Corps: Lieutenant Charles D. Lochrane resigns his commission (dated April 27th, 1912).

3rd Northern General Hospital, Royal Army Medical Corps: Alfred Edward Barnes to be Captain (dated Feb. 1st, 1912). Harry John Egerton Hutchins Williams to be Captain (dated Feb. 1st, 1912). William James Nathanael Vincent to be Captain (dated Feb. 1st, 1912).

Attached to Units other than Medical Units.—Edward Baines Kitching to be Lieutenant (dated Feb. 23rd, 1912). Captain William T. Blackledge to be Major (dated Sept. 28th, 1911). Lieutenant Robert C. Dun to be Captain (dated Jan. 7th, 1912). Captain Ernest T. Cox resigns his commission (dated April 27th, 1912).

For Attachment to Units other than Medical Units.—John Morris to be Lieutenant (dated March 8th, 1912). Percy William George Sargent to be Lieutenant (dated March 30th, 1912).

SANITARY INSTRUCTION OF SOLDIERS IN INDIA.

The instruction of soldiers in sanitation in India is carried out in accordance with the following Army Order:—

Training and employment of non-commissioned officers and men in practical instruction:—1. In order to ensure more thorough supervision of sanitary matters in the lines of British troops non-commissioned officers and men to the number shown in the following table will be trained and employed on these duties:—

—	Trained.		Employed.	
	Non-commissioned officers.	Privates.	Non-commissioned officers.	Privates.
Battery, R.H.A., R.F.A., or company of Garrison Artillery	—	2	—	1
Regiment of cavalry ...	2	8	1	
Battalion of infantry ...	2	15	1	

2. Their duties will consist in supervising within their lines water-supplies, the sale of food (except by regimental institutes), conservancy, cleanliness, disinfection, and sanitary

policing generally. While so employed they should not be detailed for other duties except musketry, and the necessary military training compatible with efficiency. When so detailed commanding officers must see that the sanitary service these men are responsible for does not suffer, and, if necessary, other trained men should replace them. 3. Classes of instruction will be arranged for annually by divisional commanders and will be conducted by medical officers specially selected. 4. The duties of the non-commissioned officers and men will be carried out under the immediate supervision of the medical officer in charge of the lines, to whom the commanding officer of the unit should delegate authority to issue any necessary directions regarding routine sanitary matters.

Methods of instruction.—The methods adopted for carrying out the instruction vary in the different divisions, but the following method, which was introduced in the First Division of the Indian Army by Major R. J. Blackham, R.A.M.C., Divisional Sanitary Officer, First Division, Indian Army, and has been working successfully for three years, may be of interest to officers of the Territorial Medical Service. The course lasts three weeks and consists of 15 working days, as work is not carried out on Thursdays and Sundays. The non-commissioned officers and men are struck off all duty during the course. The time-table of the course is as follows:—

9 a.m. to 10 a.m.	The class meet a medical officer as arranged for practical instruction.
10.30 a.m. to 11.30 a.m.	Practical instruction in various methods of purification of water or test sanitary inspections.
11.45 a.m. to 1 p.m.	Lecture by the divisional sanitary officer at the garrison school.
2 p.m. to 4 p.m.	Practical demonstrations or working out of test questions as home exercises.

The senior non-commissioned officer keeps a written record of the attendance of each member of the class in accordance with this time-table. The examination is held by a selected officer, and the results of the examination are published in Divisional Orders. In the 14 systematic lectures the men are instructed in the principles of sanitation in peace and war, and the manner in which the chief communicable diseases are spread—e.g., the rôle of the fly in cholera and dysentery and of the mosquito in malaria. Air and ventilation, water-supplies, food, clothing, the care of barracks, disposal of excreta and refuse, and disinfection are dealt with in order. The making of an efficient soldier and the objects of physical training are then explained; a special lecture is devoted to the subject of venereal disease, its interference with military efficiency, and its prevention; and another lecture is devoted to personal hygiene. The course is completed by instruction in disinfection, in camp sanitation, and sanitary organisation. The practical training carried on along with the lectures is an excellent course of instruction in the details of Indian barrack and camp life, regarded from the standpoint of health preservation, and embracing everything of importance in regard to the supply and preparation of food and drink, the removal of excreta and foul matters, and the keeping clean of barracks and their surroundings; food inspection and disinfection are also demonstrated in a practical manner. This syllabus of lectures and demonstrations appears to be excellent in every way; if its adoption becomes general the health and well-being of the troops in India will be notably bettered. We all know how "evil is wrought by want of thought"; it is just this thoughtlessness that has led to so much sickness in the tropics; the soldier's attention has not been drawn to the folly of certain practices, and the need for carefulness in regard to his own health and well-being. When such simple instruction as is here outlined becomes widely diffused throughout the army thoughtlessness and carelessness in relation to these matters will before long die out; the men will find it pays to keep well. Happily the State already appreciates this fact, as has been shown by the issue of the Army Order above referred to; it now rests with individual officers who instruct the men to speak, as Benedick says, "plain and to the purpose."

MEDICINE IN THE FRENCH NAVY.

Recent numbers of the *Archives de Médecine et Pharmacie Navales* have published the lessons learned by Dr. Bartet (staff surgeon) in the French Navy during four years in charge of the tuberculous patients in the Naval Hospital at Rochefort. The hospital was built in 1788, and to its general plan he gives every praise, but the ward for the consumptive (16 beds), the sanatorium as it is called, gets no commendation. It is a temporary building in wood, is with difficulty kept clean, is infested with rats, and in summer pestered with flies, and has no garden. The routine treatment for consumption involved a week every month on arsenic (cacodylate of soda or perhaps arrhenol), then three weeks on lime salts; very little cod-liver oil was given and no creasote. There is no mention of tuberculin. He recommends that spitting-pots should be supplied with paper linings and with lids; at present he keeps the flies off by pieces of newspaper laid over the spittoons. This hospital is intended for men awaiting survey, but that event is often much delayed, for a man's pension depends on his ability to produce a certificate of origin of his disease (very likely in the form, "It is possible that X was exposed to chill when on duty on such a date and that this is the cause of his phthisis"), and these may have to be obtained from abroad, perhaps from Saigon, which takes time. The most numerous class of patients were sailors, and the destroyers seem to have suffered severely, but no percentages are given. It is urged that all men invalided should have a pension, and especially that they shall not be sent home to infect their friends but be maintained in sanatoriums, at the expense of naval funds, until they die, to decrease infection. In the number of the same journal for December, 1911, Dr. Cazamian, in his report of inspection of the *Admiral Aube*, mentions that tuberculous sputa, mixed with an equal volume of distilled water, and having had acetic acid added to precipitate the mucin, always show an albumin reaction in the filtrate if it is examined by the tests suitable for urine. Dr. Cazamian gives great praise to the thermotank of Stewart of Glasgow as the best method for ventilating and warming ships. He is concerned about the small accommodation there is on board for the personal ablutions of the men, and, like all French writers, recommends warm douches, for which he thinks a gallon of water will suffice. He thinks the method gradually being introduced into the German navy—a basin for every man—unsuited to the French service. Iron water-tanks, he says, are only satisfactory when they are lined with about an inch of cement; he desires, indeed, to carry water in cement boxes with an outer shell of iron for their protection. In the February number Dr. Baril, surgeon of the Naval Hospital at Rochefort, after giving 200 injections of salvarsan, "that wonderful medicine," relates that he has had no accident. He uses freshly distilled water heated afterwards to drive off dissolved gases. Dr. Renault, *médecin principal de la marine* (fleet-surgeon), seeing that it was the great length of stretchers that made them impossible for use in narrow passages and in the sharp turns of air-locks, thought he could arrange to carry a man somewhat bent. So he got a sturdy young sailor, seated him, and made him bend slightly forward, and then took a plaster cast of him, on which the engineer students of Lorient moulded a thin steel trough or shell. It is a great advance on the *gouttière* Auffret, and is 56 in. long and 21 in. wide. It is closed in front by a metal apron, and the patient who rests in it on his buttocks and thighs is held steady by an indiarubber rod hinged between his legs to the trough and attached at its other end to the apron. As the appliance is concave in front it can be carried on a man's head and shoulders, the weight being taken on straps from the foot-piece to his shoulders, while one hand steadies his burden and the other remains available to help him as he climbs the ladder. Though Dr. Renault's apparatus will take a good deal of stowage space and weighs 37½ lb., it is certainly very safe for the patient, and for the man of the stock size, for which it was made, about 12 st., very comfortable.

SURGEONS WANTED FOR TRIPOLI.

The British Red Crescent Society require for the Supplemental Mission for Tripoli two surgeons, one dresser, one compounder, and two male nurses. Application should be made by letter, with testimonials, to the honorary secretary, the British Red Crescent Society, 42, Queen Anne's Chambers Westminster, London, S.W.

Dr. E. W. Hope, of Liverpool, has been elected President of the Society of Medical Officers of Health for the next session; Dr. Reginald Dudfield is the new treasurer, and Mr. Herbert Jones and Dr. Joseph Priestley have been re-elected honorary secretaries.

Correspondence.

"Audi alteram partem."

ARSENIC AND MURDER BY POISONING.

To the Editor of THE LANCET.

SIR,—Your leading article in THE LANCET of April 20th is most admirable and ought to lead to an amendment of the Registration Act of 1874 and of the Coroners Act, 1887. The Death Certification Committee of the House of Commons in 1893 made an exhaustive inquiry into the whole subject of the registration of deaths on certificates given by medical attendants on deceased persons and also on coroners' inquests. The inquiry followed very shortly after the trial of Neill Cream, who was convicted and executed for the murder of four prostitutes by strychnine given in capsules, or, as they were called by the unfortunate victims, "long pills." In the case of the first victim the cause of death was promptly diagnosed by the surgeon who was called in, but too late to save her life. It was reported to the police who were in search of the murderer. A week later Matilda Clover, another "unfortunate," was poisoned by strychnine. Neill Cream had been with her and was heard saying good-bye to her. Some time after she was heard screaming and was found by the brothel keeper and her servant to be in strong convulsions. She died soon after, and a doctor who had attended her for intemperance called, saw her body, and gave a certificate of death from chronic alcoholism. If he had refused to give a certificate and informed the police or coroner he would have gained credit, and might, humanly speaking, have saved two lives. For after going to America Neill Cream returned to London, and soon after added two more women, Shriveli and Clarke, to his victims, besides attempting to poison another woman named Harvey, who, however, thwarted him, and informed a magistrate.

Sir Walter B. Foster, now Lord Ilkeston, was the chairman of the committee, and full details of these cases were given. I gave evidence of the cases of Flannigan and Higgens. We proved four cases of arsenic poisoning against them, and there was reason to believe that the total number of their victims was 11. Well might the judge who tried them suggest that there might be in our local cemeteries other victims.

It is known that arsenic poisoning still continues. Next month the summer sessions will begin and many students will be attending for the first time lectures on medical jurisprudence. It is a grave question whether so important a subject ought not to be a winter course. It must be remembered that it is the general practitioner and not the medical jurist who is called to what turns out to be a case of attempted poisoning by arsenic, strychnine, antimony, or other poisons. Hence the importance of knowing their symptoms and the tests for them. These cases are not welcome to a busy practitioner, giving him much inconvenience and a most inadequate remuneration. But it is the glorious privilege of our profession to save and prolong life under any circumstances, and learned judges have paid the highest compliments to those medical witnesses who have done their duty as medical attendants, and also in the witness-box. Poisoners, though artful and cunning, commit blunders which form what is called circumstantial evidence. Learned counsel for the defence do not like it, but it is the evidence which a guilty man furnishes against himself. I sincerely hope that your leading article and the recent cases of murder by poison will lead to an amendment of the present Deaths Registration Act, 1874, and of the Coroners Act, 1887.

I am, Sir, yours faithfully,

Liverpool, April 26th, 1912. FRED. W. LOWNDES.

THE BED ISOLATION OF CASES OF INFECTIOUS DISEASE.

To the Editor of THE LANCET.

SIR,—In reference to the recent discussion in your columns concerning "bed isolation" in infectious disease, this system has been applied in the Bristol City Hospital, Ham Green, for the past 12 months to *all* patients. It was adopted with the idea of preventing cross infection from a patient who might be incubating on admission a second disease to the one notified. Before adopting this system one found that, if such an event occurred, it was almost invariably followed by an extension of the secondary disease to the other patients in the ward, in spite of removing the infecting case to an isolation ward immediately on discovery. Since the bed isolation system was adopted the spread of secondary diseases has been entirely checked except on one occasion where two cases of chicken-pox followed the importation of one doubly infected case. No secondary cases followed on the importation of other cases of chicken-pox, rubella, measles, ringworm, or scabies. The troublesome complication of secondary post-scarlatinal rhinitis has been entirely abolished. The patients appear less liable to later complications. The "return" case-rate for scarlet fever (1·4 per cent.) was the lowest recorded since the opening of this institution, in spite of discharging many of the patients after only a calendar month's isolation, while still desquamating. It is possible that this favourable result is due to the prevention of reinfection of the patients through not coming into direct or indirect contact with each other's mucous secretions by enforcing this aseptic system.

I am, Sir, yours faithfully,

B. A. I. PETERS, M.B., D.P.H. Cantab.

Bristol, April 25th, 1912.

THE TREATMENT OF THE EARLY STAGES OF SENILE CATARACT.

To the Editor of THE LANCET.

SIR,—Lieutenant-Colonel Henry Smith's article on the treatment of the early stages of senile cataract with subconjunctival injections of mercuric cyanide is very interesting.[1] Following on the lines laid down by Professor Darier, I have been using that form of treatment for the past six or seven years in more than 2000 cases, and have found it a valuable addition to ocular therapeutics. I can confirm many of Lieutenant-Colonel Smith's statements. He will, however, find that as far as the lenticular opacities are concerned the improvement is only temporary. What he states with regard to the pain induced by the subconjunctival injections is only too true. When I first commenced to give them patients who had already received one injection stated that they preferred to go blind rather than endure the pain of a second; and I remember more than one patient leaving the hospital on this account. Lieutenant-Colonel Smith is not exaggerating when he remarks that it is necessary in order to control the pain to put the patient under chloroform and to give him a hypodermic of at least a third of a grain of morphia.

A few years ago after trying several local anæsthetics I found that the use of alypin in the form of a 1 per cent. solution gave most satisfactory results. Very little pain is experienced after the injection, the only inconvenience is from the intensely chemosed conjunctiva and the swollen lids.

I am, Sir, yours faithfully,

PHILIP A. HARRY, M.D. Edin.,
Honorary Ophthalmic Surgeon, Rochdale Infirmary.

Rochdale, April 25th, 1912.

MEDICAL TESTIMONY.

To the Editor of THE LANCET.

SIR,—Your interesting leading article last week, as well as the note from your medico-legal correspondent, on the subject of medical testimony, leads me, a veteran, to point out regretfully that at one time and in one respect the evidence of medical practitioners became very suspect. Practitioners who can look back over 35 or 40 years will remember a time when actions for damages against railway companies were distressingly frequent, were often based upon the alleged ultimate consequences of apparently very trivial "shocks," and were fought in courts of law with the aid of medical witnesses whose presence was almost as certain as that of the leading counsel of the day, and of whom some were notoriously always for the plaintiff and others for the defendant company. In course of time the scandals connected with these trials became somewhat too flagrant, and the gradual pressure of public and professional opinion was brought to bear with considerable effect upon the demeanour and the statements of witnesses.

[1] THE LANCET, April 20th, 1912, p. 1056.

The experience is worth recalling, if only because it shows that evils of this kind are much within the control of the profession itself; when the profession perceived the evil in its midst the scandal ceased.

I am, Sir, yours faithfully,

April 29th, 1912. F.R.C.S.

MEDICAL WOMEN FOR INDIA.

To the Editor of THE LANCET.

SIR,—May we appeal through you to Christian medical women for help to be extended to the women of India, whose suffering in the absence of skilled aid in illness can hardly be exaggerated? We have medical work in many parts of India, and every week brings to us letters begging for additions to our staff breaking down through overstrain, and for qualified doctors where there are none. We would emphasise one point. It is those who go out in the spirit of the Lord Jesus Christ who win the hearts of the people. Our hospitals and dispensaries are overflowing with patients who come to them in preference to Government institutions, even where such exist. It is a remarkable fact that during the last fortnight from different quarters a Hindu gentleman and an Indian Christian lady, touched with the sufferings of women in their own neighbourhoods, have alike turned to us, a Christian society, with offers to provide the salaries of qualified lady doctors, and we have none to send.

A few weeks ago, when, through stress elsewhere, the closing of one of our hospitals in the Punjab was imminent, a petition signed by the leading men of the town was sent to us, beseeching that such a calamity to their families as the removal of the beloved doctor might be averted. For the moment, through unexpected temporary help, the situation has been saved. But unless recruits can be found, like sad catastrophes must soon occur, and, of course, appeals to occupy new districts must remain unanswered. Are there none in this land ready to come forward for this noble work in the name of our faith and for our Empire? May I add that China presses on us with hardly less powerful claims, and that money gifts are also of great value for the work of our society? I am, Sir, yours faithfully,

ANNA M. L. SMITH,
Honorary Foreign Secretary.

Church of England Zenana Missionary Society,
27, Chancery-lane, W.C., April 20th, 1912.

THE EFFECTS OF MENSTRUATION AND OF THE CLIMACTERIC.

To the Editor of THE LANCET.

SIR,—1. Will some of your readers give me information as to how far they have observed in their own experience as physicians that their patients are affected or are "subnormal" during menstrual period or climacteric: (*a*) physically, (*b*) mentally, (*c*) æsthetically, (*d*) morally, (*e*) spiritually (religious excitement)?

2. What percentage of their patients are affected or subnormal in each of these five directions?

3. Are the patients upper, middle, or lower class?

I shall be glad to reciprocate by forwarding the consensus of opinion to anyone replying, if a sufficient number of replies be received. Communications should be addressed care of Dr. J. Bullowa, 62, West 87th Street, New York, U.S. America.—I am, Sir, yours faithfully,

April 25th, 1912. H. P. MENDES, M.D.

SCHOOLS FOR TUBERCULOUS CHILDREN.

To the Editor of THE LANCET.

SIR,—Your report in THE LANCET regarding the International Congress on Tuberculosis credits me with a communication to which I have no claim. Apart from the general address delivered to the whole congress and occasional remarks when I happened to preside at the sections, I made no formal communication. I should not trouble you with this save for the reason that I fear in the considerable confusion which existed your correspondent may have been led to suppose that a paper delivered (not read) in Italian by Miss Ethel McGaw on the subject of schools for tuberculous children was mine. For the purpose of illustrating the open-air school copies of a descriptive statement prepared by me at the request of the Italian committee, with photographs of the various elements in our anti-tuberculosis scheme, were passed round. This probably led to the mistake. Miss McGaw's paper was a delightfully clear and simple statement of her views regarding the need for tuberculosis schools, and included a too modest account of what has been achieved at the Kensal House School and in Marylebone. The paper made a marked impression on the Italians present. Miss McGaw was nominated a vice-president of the section.

I am, Sir, yours faithfully,

Edinburgh, April 27th, 1912. R. W. PHILIP.

RADIUM EMANATIONS IN MINERAL WATERS.

To the Editor of THE LANCET.

SIR,—In your report in THE LANCET of April 20th of Mr. T. Pagan Lowe's excellent paper read at the Royal Society of Medicine on the above subject, I am pleased to find that he confirms, from his own personal observations, eleven important results of radium water therapy. He credits these, however, to Dr. Aikins and Dr. Harrison, who published them in the *Canadian Practitioner* in August, 1911. I should like to point out that the "results" quoted (largely the outcome of my own investigations) were published in my paper on "Radium Water Therapy" in the *British Medical Journal* of April 27th, 1911.

I am, Sir, yours faithfully,

Buxton, April 29th, 1912. WM. ARMSTRONG.

BOILED MILK.

To the Editor of THE LANCET.

SIR,—In view of the Local Government report and your leader on the value of boiled milk as a food for infants,[1] it may not be out of place to remind all concerned that when milk has once been boiled it needs to be carefully protected from contamination, especially by flies or dust, because when once the lactic acid bacteria have been destroyed by boiling, putrefactive and other bacteria gaining access to milk have unrestrained opportunities of multiplication, and such milk is apt to putrefy and acquire dangerous properties without showing signs of "souring." The absolute cleanliness of every vessel used for "boiled milk" is a *sine quâ non* if danger is to be averted.

I am, Sir, yours faithfully,

Norwich, April 29th, 1912. J. T. C. NASH.

THE MEDICAL PROFESSION AND THE NATIONAL INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—On March 23rd you were good enough to publish a letter by me in which I urged all my *confrères* engaged in general practice to test the working of a plan by which each may discover for himself the equivalence of the 2*s.* 6*d.* per visit to premium—to find out what premium would be required to cover payment for work done. The plan described also gives, of course, the average payment per head of all those who are charged 2*s.* 6*d.* per visit. I pointed out that it is absolutely essential to know how much per head per annum the population below income-tax limit pays us in fees so that we can compare that amount (when averaged) with the Government offer of 6*s.* and our claim of 8*s.* 6*d.*

Of course, I can only draw conclusions from my own practice, but they are of such an astounding nature that I cannot in discretion ask you to publish the figures. (They are, however, inclosed for your inspection.) I will merely say that the sum offered us is astonishingly generous in its relation to the figures disclosed by my investigation. If we are prepared to be content with a premium that would give us returns not less than would be given by payment for work done at 2*s.* 6*d.* per visit, then I say with all emphasis that in the terms of the Act we are offered all that we claim.

Is not our claim of 8*s.* 6*d.* supposed to represent an equivalence with payment for work done at 2*s.* 6*d.* per visit? In

[1] THE LANCET, April 27th, p. 1140.

any case, it is actually much more than the average amount paid us year by year by people who are well enough off to pay us 2*s.* 6*d.* a visit or consultation. I assert without any fear of contradiction that the 15 millions who are to come in under the Act do not now, and never have paid us as much per head as the amount now offered. It has taken a long time to arrive at this conclusion simply because no one has hitherto gone the right way about the investigation.

I consider it the bounden duty of every doctor in the country who doubts my assertion to test my claim. I have to-day taken the names of 67 men, one after the other, from my ledger. They are now alive and are "patients" (clients, more correctly) of the practice. I have then entered on the same line the amounts booked against each name for 1908, 1909, 1910, and 1911, and added these up at the end of the line. I have finally added up the sums booked to all and divided the total by 268 (67 × 4). This result gives me the average bookings per head per annum of the 67 men during the four years. Notice that they are amounts booked; the amounts received are at least 20 per cent. less. Extra fees for extra services are all included. I have done the same with 67 women, excluding confinements. The men have paid an average of 1*s.* 6*d.* per head per annum more than the women. The sickness rate may be phenomenal in my district—the death-rate, however, is 10 per 1000—and I may not be as pushing as I might be, but my figures leave such an ample margin for differences in these directions that I am compelled to the conclusion that in demanding 8*s.* 6*d.* as the premium to be given us per head of the insured we are on untenable ground; the position is indefensible. As one of those who signed the undertaking to abide by the directions of the Association I now feel that I am a party to an unjust, unjustifiable, and excessive demand.

We have all along asserted our claim to a payment that would be equal to 2*s.* 6*d.* per visit. Our estimate of this equivalent is utterly, extravagantly wrong. The offer made us is at least not less than our claim for 2*s.* 6*d.* per visit, and I contend that we are in honour bound to reduce our demands with what grace we can.—I am, Sir, yours faithfully,

B. HALL, M.B. Lond.

West Mersea, Colchester, April 28th, 1912.

To the Editor of THE LANCET.

SIR,—Even now medical men do not, all of them, pay due regard to the conditions under which our services will be accepted under this Act. I do not think that even to-day we all fully realise what these are. To come near doing so we must all bear in mind that this Insurance Act has as one of its objects the prevention of diseases by the eradication of their causes. To compass this, voluminous statistics will be required. In the returns patients' names will have to be entered according to age and sex; the ailments, too, will have to be dealt with in accordance with an elaborate scientific classification, and in all likelihood a summary will be required. One can well imagine that no small amount of midnight oil will be burnt over these quarterly reports. Again, the work will be carried out under the control of Government officials, and if we fail to do it to their satisfaction we are open to reprimand at the hands of what is practically a lay committee. We should consider as well what we are going to lose by giving up our dispensing. Our time is devoted to our work as a whole, and if the dispensing is taken away it means the taking away of so much remunerative work. The fact only needs to be stated to show its unfairness. Also, the prescriptions being taken to the druggist will lead to his coming more into touch with our patients and their families and consequently to more prescribing over the counter. Besides the prescriptions given at a cheap rate can and will be used over and over again by people who do not come under the Act.

As to the method of payment, the Government prefers the flat or *per capita* rate, though it may bring endless discontent on the part of the patients. These would ever have it in their thoughts that they were not getting the sympathy which they would under the one of payment per visit, which would put them on the footing of private patients. It would surely detract from the smooth working of our practices if we turned our private patients over to the club system. In the making of this change there is also the sentiment on the part of the doctor to be considered.

These are some of the sacrifices we have to make and some of the duties which will be required of us did we accept office under the Act as it at present stands.

I am, Sir, yours faithfully,

April 26th, 1912. J. MORROW.

To the Editor of THE LANCET.

SIR,—Adherence to a sum of 6*s.* to cover the entire cost of the "best medical attendance" and the supply of medicine will be a deliberate insult to the British medical profession—an insult which is aggravated by the statement that any expenditure over this amount would bankrupt the scheme. This simply means that from the beginning those responsible for the Act have placed a lower valuation on the services of the British practitioner than obtains in Germany, where the club doctor is certainly by no means adequately rewarded for his work. I venture to give you the figures for medical attendance in Germany, as possibly you may be able to make use of them to some advantage; they are taken from the Imperial Statistics on Insurance against Sickness for the year 1909, the last officially issued.[1]

The German club doctor receives a *per capita* payment averaging 3*s.* 9*d.*, 4*s.* is a high average. In addition to the club doctor, arrangements are made with specialists, and the latter are paid according to the minimum rates of the official scale of charges for professional services. Thus we find that the average expenditure per head of the insured in Germany for medical attendance—i.e., club doctor and specialists—amounted to 5*s.* 9*d.*

In addition we have to bear in mind that in Germany hospital patients are made to pay, and in the case of sick club patients the average charge per diem for hospital treatment, including all medical or surgical attendance, medicines, &c., amounts to 2*s.* The cost *per capita* of the insured for hospital treatment amounted to 3*s.* 4*d.*, it is usually assumed that one-third of this amount represents the cost of medical attendance and medicines, so that on adding the 5*s.* 9*d.* to one-third of this sum (1*s.* 1*d.*) we reach a total of 6*s.* 10*d.* for purely medical attendance. The cost of medicines, &c., comes to 3*s.* 7*d.* per head, so that the total cost *per capita* for full medical attendance and the supply of medicines amounts to 10*s.* 5*d.* The correct total for "medical benefit" in the German sense—i.e., 5*s.* 9*d.* for doctors, 3*s.* 7*d.* for medicines, and 3*s.* 4*d.* for hospital treatment—would be over double the sum suggested for British practitioners under the new Act—viz., 12*s.* 8*d.* as compared with 6*s.* At any rate, the *per capita* cost for purely medical attendance, 6*s.* 10*d.*, is still considerably higher than the Chancellor's figure; even the 5*s.* 9*d.* for club doctor and specialists exceeds his valuation of the professional services of the British doctor.

It may interest you to learn that for every day's illness, coupled with the receipt of sick pay, the cost for medical attendance per person insured averages 8½*d.*; this is of course too high a figure to accept as representing the remuneration of the doctor for every visit to a patient, as no record is kept of the visits paid to members who are not incapacitated for work and do not draw sick pay; this naturally reduces the average fee per visit very considerably, I am told it would be as low as 5*d.* if every visit were considered.

I am, Sir, yours faithfully,

April 27th, 1912. EXILE.

[1] These figures have appeared in THE LANCET almost in the same form, but in view of the constant allusion to the German example it is well to publish them again. The official scale of fees for medical services was dealt with fully in THE LANCET, May 13th, 1911.—ED. L.

THE NATIONAL FOOD REFORM ASSOCIATION.—A conference on diet in public, secondary, and private schools will be held at the Guildhall, London, on May 13th, under the auspices of the Food Reform Association, when the Lord Mayor will preside. The subjects for discussion include Diet as a Factor in Physical, Intellectual, and Moral Efficiency; the Main Lines of Reform; and Instruction in the Elements of Physiology and Personal Hygiene. The representative committee is issuing invitations to the heads and medical officers of schools, members of the Parents' National Education Union, Child-Study Society, and similar organisations, as well as to prominent educationists. Full particulars may be obtained from the National Food Reform Association, 178, St. Stephen's House, Westminster, London.

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS AT ROME.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

Rome, April 21st.

The Closing Ceremony.

THE Congress is over. The closure has been pronounced in due form. The Congress survives, but it is only to meet again in five instead of three years, and it has been shorn considerably of its activities. The International Medical Congress assembles in London next year, and, according to the Budapest decision, is to meet every four years; therefore both the Medical and the Tuberculosis Congresses are due for the year 1917. This is just the sort of clash that a permanent international commission on all allied congresses should avoid, and would avoid, if such a body existed and was properly organised. The three greatest congresses are Medicine, Hygiene, and, the youngest and least experienced of them all, Tuberculosis. After this vote fixing 1917 for the next congress on Tuberculosis, is it not time that the three great congresses, so intimately connected with one another and attended to a large extent by the same persons, came together and strove to work and organise in harmony one with the other? On the present occasion, as explained in a previous letter, we have had a sort of faction fight with a possible political tinge. The Conference deliberately attempted to interfere with the Congress. The 125 members of Conference thought it was about time the Congress, with its 3000 to 6000 members, disappeared. Here, as the Conference was very much more under the influence of one single nation than the Congress was likely to be, it is easy to understand that some persons thought they discerned a political object in the proposal. But in reality the Congress is self-governed and has nothing to do with the Conference. It is a mistake to have allowed the two to meet in the same town at dates touching, so that the Congress began the day after the Conference terminated. That this should have happened in America is more excusable, considering the great difficulty of bringing a large contingent of members over from Europe. But even in these circumstances care was taken not to arrange the meetings in the same town. The Conference sat at Philadelphia and the Congress at Washington.

British Invitation Accepted.

On the present occasion the chief representatives of each nation, who alone constitute the executive government of the Congress, met, not on the Saturday morning as is usual, but on the Friday afternoon. An attempt had been made to prevent the sections voting any resolutions whatsoever, and this would have effectually proclaimed the impotency of the Congress. At the meeting of the national representatives it was also necessary to consider the invitations for the next congress and the date at which it would assemble. There were three—one from Spain, another from Monaco, and, finally, one from England. Objections were raised to the last on the ground that it did not emanate directly from the British Government; but this was overcome by the weighty and persuasive letter the British Ambassador addressed to the Congress. By 18 votes against 3 the Executive Committee decided in favour of the British invitation. This vote may be taken as further meaning that the Congress maintains its independence, does not acknowledge that the Conference has any right whatsoever to interfere, intends to remain master in its own house, and will not allow any one nation to assume any sort of leadership in a purely international organisation that has nothing to do with politics, and seeks equally to forward the happiness of all nations. These are all very important facts. The result is satisfactory, but between this and the next Congress something must be done to improve the mechanism of these congresses. Rules of procedure or standing orders are sadly needed. All this exists in England, where we are well trained in the management of self-governing assemblies. But there are hardly any precedents or rules established on the continent, and this leads to much confusion while greatly reducing the value of what is done.

The Final Meeting.

The final and plenary meeting was held on Saturday morning. The Congress—that is, all the sections—assembled in the Salone Romano, and the chair was occupied by Professor MARAGLIANO. After a few explanations and compliments the President called upon the general secretary, Dr. Ascoli, to read out the resolutions carried in the sections. Here at once we perceived the need of a standing orders committee, for some of the resolutions were small pamphlets and not resolutions in the usual sense of the word. Others expressed such absolute platitudes that they should not have been allowed to waste the time of the Congress.

The Resolutions.

Without giving the resolutions in full, the general drift may be gathered from a mere summary. We began with a resolution demanding that children in all schools should be taught some of the fundamental principles involved in the war against tuberculosis. Another resolution demanded that charitable, Poor-law relief, and other helpful institutions should be federated so as to prevent overlapping, waste, and duplicating. The principle of the compulsory notification of tuberculosis was approved. Professor LANDOUZY here urged that the word *déclaration* should be substituted for *dénonciation*, as the latter might be considered offensive. We are fortunate in possessing the word notification, as it cannot be thus misinterpreted. Another resolution in favour of more education on tuberculosis advocated travelling museums and lecturers such as we find already in America and to some extent in England. Close upon this comes the resolution to the effect that the discoveries of science will remain sterile unless the State provides financial means to secure their practical application. In regard to finance there is a proposal to tax departing emigrants so as to form an insurance fund to bring those who fail home again and to take proper care of returning patients. The mayors of Caltagirone and Bergamo had a resolution in favour of giving communal authorities the right to expropriate owners of insanitary property without paying exorbitant compensation. Another purely Italian resolution demanded that there should be special schools and examinations in sanitary engineering. Another asked for special schools on domestic hygiene.

Bovine Tuberculosis and Man.

We now came upon the vexed question of bovine tuberculosis, and a lengthy resolution, awkwardly worded, was read out to the meeting. It commenced by arguing that as doubts still existed in regard to the injury done by milk from tuberculous cows, it was still more reasonable to question the risk resulting from eating the meat of tuberculous cattle. Then came some vague sentences about the different and contradictory laws enacted in various countries for the destruction of tuberculous carcases, and the resolution concluded that it hoped more rational dispositions would be adopted which should be in harmony with "the recent knowledge acquired as to the virulence of meat coming from tuberculous animals." To me it seems that this resolution may either mean that the law is often too hard upon the butcher or, on the contrary, that it is not sufficiently severe; but judged by the context I rather fancy it favours the butcher. In any case, we here again want a standing orders committee to prevent resolutions going before a congress unless they are properly framed and intelligible.

The really important resolution on bovine tuberculosis is that which came over from the preceding Conference on Tuberculosis. It is now approved both by the Congress and the Conference, and is worded as follows:—

1. The prophylaxis against tuberculosis must have for object principally the suppression of the contagion from man to man, and especially in the family.
2. The infection of man by the bacillus bovinus is less frequent. However, it is necessary to maintain the prophylactic measures against the infection by cattle.

Housing, Medical, and Surgical Resolutions.

On the housing question a resolution urged municipalities to keep and to acquire as much land as possible so as to improve sanitary conditions; private owners should only be allowed to build up to a certain fixed height and on a restricted portion of the ground. Then another resolution dealt with home work and the contamination of clothes and articles of food by home-workers, demanding, of course, better regulations and in some cases total suppression. The following was one of the rare resolutions from the Second or Medical Section. Instead, however, of giving the English

text, I have translated it from the French, which differs somewhat and seems more clear.

The Congress, after the very interesting reports and discussion which followed on the artificial pneumothorax treatment of phthisis, discovered by Professor Forlanini, applauds first and foremost the professor himself, and Professors Brauer, Saugmann, Damarest, and all colleagues who have brought to the Congress important contributions arising from their experience, and expresses the hope that the aforesaid method will be largely applied.

No sooner had this been read out than Dr. H. VON SCHRÖTTER, of Vienna, sprang up and proposed the following addendum :—

The Congress recognises the great importance and practical value of the sun cure and of the profound study of heliotherapy from both the scientific and practical point of view.

This addition was accepted, as indeed everything else, without discussion.

From the Surgical Section there was a resolution endorsed by Dr. E. Banfi, Dr. Bertarelli, Dr. Calvé, Dr. Calot, Dr. Ferraresi, Dr. Fcà, Dr. Gatti, Dr. Maffi, Dr. Pisani, Dr. Poli, Dr. Sanarelli, Dr. Salvini, and Dr. Trevisan, proclaiming the great service rendered by seaside hospitals in the treatment of surgical tuberculosis, especially when children are concerned. Therefore, the demand is made that such maritime hospitals should be largely and promptly increased. Finally, and it seems to me contrary to rules or precedent, a representative from France was allowed to move a resolution that had not been submitted to any section, though the subject had been fully debated in the First Section. It urged concentrated efforts in support of institutions that sought to rescue children from tuberculous contamination. No one could possibly object to this except that, as a matter of procedure, it is dangerous to allow resolutions to be sprung at the eleventh hour upon a Congress when examination and discussion are impossible.

The PRESIDENT now delivered another short speech, thanking everyone, especially the foreign Governments, who had sent official representatives to the Congress, and then the Congress enthusiastically accepted the invitation to meet in London five years hence.

The Last Words.

Instead of the lengthy filing past of a representative from each nation, Professor LANDOUZY made one single speech on behalf of all the nations. His colleagues of both worlds, he said, entrusted him with the word of all nations. Nowhere could all nations be better assembled than at Rome, which was the common cradle of so many. With a white stone, proceeded Professor Landouzy, we will mark the days spent in Italy, and like Goethe bring back the happiness of having seen the Eternal City. We shall be a force when we return, for our eyes will be illuminated and will radiate the light arising from the conviction that we are better armed in the accomplishment of a humanitarian mission. The echo of what so many specialists have said will spread. It constitutes a crusade that will move governments and give birth to more and better laws. Communities and nations are taking action, and now associate with each other to combat this fell disease. From this evil has sprung a great good—the solidarity of mankind against tuberculosis. And now we are going to England, the country of Harvey, Jenner, Sydenham, and Lister. There we shall find much social legislation to encourage and to instruct us.

Professor MARAGLIANO brought the meeting to a close with a few touching words. The Congress, he said, had distinguished itself by insisting that the State must intervene to prevent and check disease. The principle of individual liberty was limited by the maintenance of the security of our neighbours from infection. The many scattered institutions must be federated. He thanked all who had contributed to the success of the Congress and hoped they would live to meet again in London.

We cheered and rose and slowly left the hall. It was all very simple. There was none of the show and solemnity seen on many other similar occasions. The work, however, has been done in some respects very satisfactorily, and that is the most important thing.

SECTION I.—SOCIAL DEFENCE.

Rome, April 25th.

On Tuesday, April 16th, Professor SANARELLI presided over the meeting of the First Section.

Coördination and United Action.

Professor TAMBURINI urged the union of all institutions, whether due to private or to public charity. For that purpose a local congress had been held at Rome in 1910, and an alliance between all the various institutions of the capital did already exist. They were now building an institution for 60 children in a coördinated manner. But united action was not only needed in Rome, it should exist over the entire country.

Dr. FELIX PUTZEYS (Liège) presented his report on prophylactic and curative institutions against tuberculosis, and also insisted on the necessity of coördination and united action, for no one institution or service was sufficient in itself. Thus whatever system of poor relief may exist it would constantly be called upon to supplement the work of antituberculous dispensaries. The hospital administrations, on their side, must help in the treatment and isolation especially of advanced cases, and Dr. Putzeys insisted on the impossibility of isolating the poor in their own homes. In small dwellings enough air could not be obtained without creating insupportable draughts. This brought them face to face with the housing problem, on which so many investigations had been held and reports and statistics published. All these documents were so absolutely convincing that it was a standing disgrace to humanity that so little had been done. The Governments and peoples should have been shamed into taking action. The children should be early taught habits that would protect them in after life.

Encouragement from America.

Dr. EDWARD O. OTIS (Boston, U.S.A.) urged that for definite action we needed definite knowledge, and this we now possessed in regard to tuberculosis. Our preventive and curative efforts were also means of educating the people. Koch's incomparable discovery had given us the key to unlock the doors so long barred that led to prevention and cure. Thus enlightened, we had already achieved so much success as to warrant the hope of totally removing tuberculosis from the list of prevalent diseases. At first, said Dr. Otis, the bacteriologist begins the work, then he is followed by the hygienist, and now is the time to enlist the whole community in the good work. Against a social disease we need a social defence. All must be taught the supreme importance of fresh air, rest, proper food, and the need to destroy the sputum. The depressed and predisposed must be sent to work in the open air. We must greatly increase the open-air schools. In America there was the tuberculosis "class." This meant that where a few tuberculous patients are treated in their homes, being visited by a nurse, they meet their physician once a week in what has been termed a class, and he discusses the record of each case before all the rest. By that means the patients were encouraged to follow the example of those who made the best progress. The day and night camps, by the propaganda of those who attend, had been a powerful educational influence. The public is now much more on the alert. The great thing was to follow the patient after treatment; by this means personal instruction was given in at least a thousand Boston homes. The more the matter is studied the deeper becomes the conviction that tuberculosis is a social disease. Moral, social, economic remedies were far more important than the mere fight against germs. But to kill the germ we had to remove the misery that was the main cause of unhealthy conditions; and the power, the advantage of the present Congress, was that it united in a common effort members of different political parties and of rival creeds.

Saving the Children.

Dr. MAURICE DE FLEURY submitted his report on the necessity of coöperation between the school health authorities and the Poor-relief authorities or institutions. In France it was believed that tuberculosis was contracted at an early age, and the question was whether it would lie dormant or be allowed to assume fatal proportions as a consequence of bad surroundings. We wanted direct and indirect action—pure milk, crèches, better hygiene in schools and workshops, food for mothers, country air for children, better care of the orphans and the abandoned. The Paris Municipality had asked Parliament permission to spend £8,000,000 on a housing scheme. Millions of pamphlets, post-cards, and posters had been issued to arouse public opinion, and get votes and money to do what

we all know must be done. But at present the French Ministry of Agriculture spent £72,000 per annum to save cattle and only £5000 for children. In Denmark far more was done for the children. It must, however, be noted that when a French child was sent away to the country or the seaside he remained there a long time, as much as five or six months, though even after this the good was neutralised by the insanitary conditions of the home to which he returned.

Dr. FRANCESCO GATTI (Italy) gave a summary of the precautions taken in Italy. He remarked that as far back as the eighteenth century several diseases were treated by sending the patients to live in the mountains, and insisted on the necessity of removing all surrounding sources of contamination.

Dr. DELILLE (France) gave figures relating to close upon 800 children taken from their families when there were cases of tuberculosis, and who were in all probability, considering the surroundings, likely to contract the disease. Only four died from tuberculosis, and this so soon after they had been rescued as to make it evident the disease had already a hold upon them before they left. All the other children had been away now for from six to eight years, and not a single other case of tuberculosis had occurred among them. They were therefore fully entitled to say that the disease had been prevented. These town children had grown up to be as healthy as the country-born children. They had not inherited any taint or they had grown out of it. Many of the town children have now chosen to remain in the country. This was a double advantage, for the land was so much in need of men to work upon it. Of course, these 800 children did not clinically appear to have as yet been contaminated, only it was felt they had little chance of escape if they remained in such poor and contaminated surroundings. Those who were actually ill were sent to the seaside to the Hendaye Sanatorium and remained there from four to six months. There had been radical cures when the treatment was sufficiently prolonged, and some former patients were now serving in the army or earning their living.

Professor DEVOTO (Milan) complimented Professor Tamburini on his report and urged that it was among the poorest sections of the community that most of the work had to be done.

Professor BRUNELLI then followed, proposing a resolution protesting against the dispersion of charitable resources for want of organisation, and expressing the hope that the public authority would intervene, so that ancient charities which were out of date might be modernised and all charitable work cöordinated to the best advantage.

An Attempt to Suppress Resolutions.

Here, however, the PRESIDENT intervened, and said that he had been told no resolutions were to be put in the section. This most unexpected announcement produced general consternation, followed by the clamour of many voices. The confusion was further increased by the very natural impatience of those who could not understand, but realising something important had occurred, now loudly demanded a translation. A few angry speeches followed. Who could have ventured to alter the rules of the Congress? How could a rule be altered without first consulting the entire Congress? What was the good of coming, of making so many persons travel thousands of miles if they were to go home empty-handed? Why discuss if not to ascertain on what points they were agreed? How could they hope to be an influence for good if no one was to be told what was the opinion of the majority? This could only be ascertained by condensing the opinions pronounced into a vote which the section could adopt and the Congress confirm.

It did not require many minutes of such protests to convince the President of the section that the instructions he had received could not possibly be enforced, and he therefore allowed votes to be taken. The above-mentioned resolution was forthwith carried, though in the confusion a counter vote was never called for.

Dr. NASI now moved a resolution calling upon the States to assist more liberally institutions to combat tuberculosis. He spoke specially of hospitals by the seaside. There were 50 such maritime institutions in Italy, and they gave excellent results. It paid to treat patients, for the State gained in saving the health of the people.

Professor RUDOLF LENHOFF (Berlin) speaking in French, protested that all the morning speakers had insisted on the utility of this or the other institution, but they forgot that there was not money enough for the whole community to profit by the measures advocated. Nor was it possible to obtain the money unless the State established a system of compulsory insurance. This they had experienced very fully in Germany. All the workers were now assured, and this was specially useful for the protection of children. This could only be done if the families were insured. Perhaps the care of the children was now better managed in Hungary, but whether it be the German or the Hungarian model the cost was so enormous that everyone must be made to contribute. Nor did this suffice. The administration must be centralised; there must be no duplicating nor subdivisions, nor luxuries of any description. In Germany they had succeeded in nursing children for about 8*d*. a day. He therefore thought the section should insist on compulsory insurance.

The resolution, however, that was ultimately carried merely urged that it was the duty of the State to intervene. Another resolution was also carried in favour of utilising schools for teaching children how to prevent tuberculosis—that is, giving general lessons on sanitation.

The section now adjourned, having adopted, after all, a good many resolutions, though they were all very moderate in tone and did not proclaim anything new or unusual.

SECTION II.—PATHOLOGY AND THERAPEUTICS.

On the surgical side of this section Dr. R. ALESSANDRI (Rome) contributed a paper on

Non-operative Treatment in Surgical Tuberculosis.

He referred to the difficulties of the subject and the conflicting opinions which are held on the indications for non-operative treatment and on its limitations. He insisted especially on the need for accurate diagnosis. In dealing with the local lesion he said it must be remembered that surgical tuberculosis is, as a rule, secondary to some other primary focus beyond the surgeon's reach. Only exceptionally is surgical tuberculosis primary. The local treatment, therefore, must depend much on the state of the primary focus. All are agreed upon the necessity for treating the whole patient, and for giving repose to the diseased part when possible; but beyond this there is great diversity of opinion. Among the various non-operative methods of local treatment Dr. Alessandri himself favours iodine and the tuberculins. Iodine, in spite of our ignorance of its real mode of action, is very valuable. Conservative treatment is especially indicated in tuberculosis of the skin and superficial tissues, of bursæ and of the male genital organs. In tuberculosis of the female genitalia, the kidneys, and the nervous system, on the other hand, it is generally thought best to operate when possible, although future advances in specific and iodine medication may modify our present ideas. In tuberculosis of the bones conservative treatment may be tried with advantage, but it often fails and must give way to operative treatment. Operation is also necessary in open tuberculosis when there is a mixed infection, and in tuberculosis with fistulæ.

Mr. H. J. GAUVAIN (Alton, Hants) read a communication on

Intervention in Tuberculous Disease of the Bones and Joints.

He discussed the importance, limitations, and indications, and the most opportune moment for radical or other intervention in surgical tuberculosis, as exemplified in tuberculosis of the bones and joints. He regarded surgical tuberculosis as a general infection with local manifestations.

Mr. E. M. CORNER (London) read a paper on

Tuberculosis of the Mesenteric Glands in Children, its Frequency and Treatment.

Mr. Corner called attention to the frequency of tuberculosis of the mesenteric glands in children, which, however, he said, was not necessarily of evil prognostication. The reasons for this frequency were: (*a*) The progress of digestion from a mechanical and physical point of view—(1) in the small intestine, and (2) in the large intestine; (*b*) the difference in structure and (*c*) in function in relation to their peristaltic contraction; (*d*) the structure of the small intestine ends abruptly at the ileo-cæcal valve, at which point the structure of the large intestine begins at once; (*e*) at this point there is a pause for the products of digestion, and (*f*) at the same time

a mixed crowd of micro-organisms is introduced. Infectious conditions (such as tuberculosis, &c.) there reach their maximum of infectivity or septicity. As a protection a large amount of lymphoid tissue is formed in the ileo-cæcal region. From that cause arise the functions of the appendix vermiformis. A continual struggle ensues from which arise bad health, pain, constipation, &c. The removal of the appendix removes a great danger and cures the child. It is important to make clear whether these tuberculous mesenteric glands are due to bovine or to human tuberculosis, but the most important thing is to remove the appendix.

SECTION III.—ETIOLOGY AND EPIDEMIOLOGY.

On Monday, April 15th, under the presidency of Professor MARCHIFAVA, of Rome, Professor KÖSSEL, of Heidelberg, acting as Honorary President, a discussion was held on

Tuberculosis in Man in Relation to Tuberculosis in Cattle and Domestic Animals.

Professor KÖSSEL took the position that the infection carried through the bovine, though undoubtedly present, was not, in Germany at any rate, of such great importance that special attention need be paid to, and special preventive measures taken against, this method of transmission.

Professor GOSIO was also of the opinion that the transmission was usually through the human subject. He, however, deprecated any effort to minimise the importance of the bovine method of infection.

Professor VALLÉE and Dr. GRIFFITHS and some of the subsequent speakers drew attention to the fact that infection from the bovine animal was now not merely an academic question but one of real practical importance. Of course, it was suggested that conditions might be somewhat different in different countries, and Professor CALMETTE (Lille) brought forward evidence from Eastern countries which might very well support this contention; but there seemed to be very little doubt that in the British Isles, in some parts of France, Germany, Scandinavia, Denmark, and Russia bovine tuberculosis is not a negligible quantity in relation to the spread of tuberculosis, especially among children. At the conclusion of the session it was agreed that the resolution already carried at the Conference should be the resolution adopted by the section, and that this resolution should be recommended for adoption at the general meeting of the Congress.

It was hoped that Professor L. Panisset, of Lyons, and Professor J. Heymans, of Ghent, would bring forward reports on tuberculosis in milk. Abstracts of their papers were put forward, but the authors were not present to read them. Professor HEYMANS'S conclusions are somewhat interesting. He thinks that milk containing living bacilli in addition to being the great source of infection among the domestic animals, especially swine, is the most frequent cause of the presence of the bovine type of bacillus where that organism is found in cases of human tuberculosis. He maintains that although it has not yet been proved that in the ordinary conditions of life the tubercle bacillus of the bovine type can be transformed into the human type in the human body, and conversely, that there is no evidence of the conversion of the human type into the bovine type, it is of course possible that this may take place. He is satisfied that every milch cow suffering from "open" tuberculosis, especially where mammary tuberculosis is present, should be absolutely excluded from the milk-supply. He thinks that by every prophylactic means, the tuberculin test, and even by vaccination, an attempt should be made to increase the number of herds of cattle free from tuberculosis. Until this is done he contends that all milk should be sterilised by heat, so that there may be at least a complete guarantee that the tubercle bacillus, whether of human or bovine origin, should be dead and not living in the milk.

A number of very interesting papers were read in the afternoon: by Dr. HARBITZ on the Frequency of Tuberculosis in Infancy and on the Methods of Infection; by Dr. SIEDLER (Paris) on the Alimentary Hygiene of Infants in its Connexion with the Predisposition to Tubercular Infection; and by Dr. TERNI (Milan) on Tuberculosis, Human and Bovine, amongst the Rural Population.

Preventive Vaccination.

Following these papers Professor MARAGLIANO (Genoa) gave a lecture on Preventive Vaccination of the Human Subject against Tuberculosis, in which he gave the result of his ten years' experience of vaccination against tuberculosis. He pointed out that it was necessary to distinguish between the mere presence of tubercle bacilli in the organism and of true tuberculous disease which comes into existence only when the defences of the organism are lacking or incomplete. He maintained that every healthy human being can carry on an effective fight against the tubercle bacillus, especially when, in addition to the natural defence, he is able to call to his aid the specific means of defence recognised in connexion with vaccination. Although the specific immunity is not absolute in practice, it is of enormous value in rendering both man and animals less susceptible to tuberculous infection. Maragliano prefers the dead bacilli to the living, especially for preventive purposes. He mixes these dead bacilli with glycerine and vaccinates much as in the Jennerian method of vaccination against small-pox. He finds that animals so vaccinated develop an increased quantity of opsonins, agglutinins, precipitins, and antibodies generally, with the result that animals are able to resist minimal lethal doses of tubercle bacilli. The same insusceptibility may be induced in dogs, the highest degree of immunity being attained about 60 to 70 days after vaccination. He claimed that many children belonging to families partially destroyed by tuberculous diseases have been vaccinated in this way, and referred to 465 patients that he had been able to follow. They were all living and in good health, and he ventured to say that the vaccination had had no evil, but rather a beneficial, effect on the general health of the patient. He maintained that the treatment was perfectly innocuous, and in view of the good results he had obtained he proposed to test the treatment on a larger scale and to observe the results most carefully.

There was naturally a good deal of discussion of the method used and results obtained, and there was some difference of opinion as to the degree of immunity produced in these cases. Further results are promised.

Dr. WEBB (Colorado) condensed what he had to say into very few sentences, but he certainly whetted the appetite of those who heard him for a fuller description. He is evidently a very keen observer, and most of those who were there that afternoon will await with interest the publication of his lecture, which appeared to be based on accurate observation and good sound evidence.

Channels of Invasion and Diffusion.

On Tuesday morning Professor CALMETTE, in opening the discussion under the honorary presidency of Professor Sims Woodhead, described channels of invasion and diffusion of the tubercle bacillus in the human organism. He appeared to lay somewhat less stress upon infection by the alimentary canal than he did at the last Congress. He gave an exceedingly interesting *résumé* of the work that has been done in recent years, and pointed out that, in by far the greater number of cases of contamination by tubercle bacilli in the human subject, the disease is developed in the earlier years of life. This extreme frequency of infection results, on the one hand, from the compact social grouping of human individuals and of the necessity there exists for many of them to live under these conditions, conditions which increase greatly the ease with which tubercle bacilli, given off by diseased patients, can be diffused; whilst, on the other hand, these conditions of social life, habitation, co-habitation, family life, nutrition, collective work, &c., aggravate and multiply the opportunities for infection. In many cases invasion might take place without leaving any trace of the lesions at the point at which the bacilli enter. Certain individuals and organisms, he thought, were naturally, or could be rendered artificially, insusceptible to tuberculous infection. The former form of insusceptibility might under certain conditions become diminished, thus leaving the patient vulnerable; whilst the second of these, the acquired resistance, was certainly neither absolute nor very prolonged. The gravity of tuberculous infection in the human subject appeared to be governed by factors which determined the virulence—that is to say, the infective power of the bacilli. This gravity is greater or less, he considered, according to the animal from which the bacilli made their attacks, and he thought that the bacilli coming from a phthisical individual were more active than

were those which appeared to be of bovine origin, these latter, he maintained, having a feeble virulence for the adult human being and a comparatively feeble virulence for the child. He thought also that it varied according as the bacillus had been treated for a longer or shorter period by air, light, ultra-violet rays of the solar spectrum, desiccation, &c. He thought, too, that the dosage—i.e., the number of bacilli gaining access to the organisms—played a very important part in determining the infection, massive doses in many cases being followed by infection when minimal doses had little or no effect except perhaps in raising the resistance of the patient. Finally, the danger of infection must, he considered, vary according as the subject who received the dose of bacilli has already been infected or not.

Dr. WELEMINSKY (Prague) after referring to the very large number of children of over 10 years of age who react to von Pirquet's test—90 per cent.—pointed out that the only primary infection which can be traced with certainty rarely originates in the lungs, although children are just as much exposed to aerogenous infection of the lungs as are adults. He believed that tuberculosis in adults was really often but a continuation of the infantile tuberculosis, though this latter occurred in the lymphatic glands, whilst in the adult the disease usually assumed the pulmonary form. From this he argued that certain systems of the body have become immune, although other tissues and systems might still be infected.

This argument was followed with considerable interest by the members of the section, though several points were brought out which scarcely seemed to support Dr. Weleminsky's contention. He defended his position with considerable ability.

THE INTERNATIONAL ASSOCIATION OF THE MEDICAL PRESS.

MEETING AT ROME.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

The Morning Sitting; the General Secretary's Report.

THE International Committee of the International Association of the Medical Press met on Saturday, April 13th, morning and afternoon. Dr. Lucas-Championnière, the President, had travelled as far as Florence to attend, but was not well enough to conclude the journey. The committee was the more disappointed, as it was desirous to congratulate its President on his recent nomination as a member of the French Institute.

Professor AUGUSTE TAMBURINI, on behalf of the Association of the Italian Medical Press, welcomed the members present in the name of Italian journalism, political and scientific.

Dr. DEJACE (Belgium), as Vice-President of the International Association, took the chair, and called on Dr. RAOUL BLONDEL, the general secretary, to present his report.

Dr. BLONDEL explained that all the national associations affiliated had been invited to send members to Rome. Several among those who had promised to attend had not yet arrived; however, the most important nations were represented, and the business in hand could be dealt with. He said he was especially happy that the committee was meeting in Rome, for in this respect, as in regard to so many other important movements in civilisation, Rome was the cradle of their enterprise. The International Association of the Medical Press was the outcome of what happened at the International Medical Congress held at Rome in 1894. On that occasion the sections of the Congress met in different places, often far apart, and there were no facilities for the press correspondents to do their work. Dr. Baudoin and Dr. Laborde for France, Dr. Rammo for Italy, and Dr. Posner for Berlin at that time consulted with each other and started the idea of forming an Association of the Medical Press, whose first object should be to urge on the organisers of congresses that greater facilities for representatives of the press must be found. The organisation of the present Congress on Tuberculosis included a real welcome given to the representatives of the medical journals, and the facilities now afforded were all very practical testimony of the good work done and the results achieved. There had been some difficulties, however. For instance, the association had arranged to publish a report in volume form describing its organisation, that of the national committees, and giving some account of the affiliated journals. The proofs of this volume were submitted at the Lisbon meeting in 1906, but shortly afterwards the Italian Association split into two sections and the publication was postponed till a reconciliation had been effected. This happy event did not occur so soon as was anticipated, but now, at last, the Italians were united and the publication of the report of the proceedings of the association need no longer be delayed.

The committee did not meet last year, continued Dr. Blondel, as such a meeting would have followed too closely upon that held at Budapest, and there was nothing pressing. The general secretary went over to London, when it was agreed that the meeting of the committee should be postponed until the present Congress in Rome, the approval of the British Association of the Medical Press having been obtained. The most important practical matter to be considered, Dr. Blondel thought, was the International Medical Congress that would assemble in London in the summer of 1913. The members of the Medical Press Association would have to meet in London two days previously. The chief thing to urge upon the organisation of that congress was that the reports which would form the basis of discussions should be in the hands of the press for as long a time as possible before the congress. Everyone who proposed to speak should be advised to summarise his observations in three or four languages and send 100 copies in print of this summary to the press bureau at the congress.

In regard to the organisation of congresses, said Dr. Blondel, those members of the press who went regularly from congress to congress were especially qualified to advise. This was recognised at Budapest, and when a Permanent Committee was appointed for the organisation of medical congresses the President of the International Association of the Medical Press was elected as a member of this Permanent Committee. This newly formed organisation was not, however, giving satisfaction to all concerned. It was perhaps too early to find fault. The Permanent Committee was inexperienced and might live to mend its ways. In the meanwhile, it had laid itself open to the accusation of proceeding in an arbitrary manner. It was weighing too heavily on the national committees and was too apt to assume an attitude of imperial over-lordship. Thus the French National Committee, which had managed things fairly well in the past, had been told what to do and had received invitations from the Permanent Committee established at The Hague written in grotesque French to attend the London Congress. They would have preferred to receive the invitation from London and in good English. But what specially concerned the press was that the Permanent Committee, sitting at The Hague, did not communicate through the national committees of the medical press, but itself assumed the responsibility of deciding to what journals it would communicate. Dr. Blondel did not think the Italian, the British, and the French were likely to pay much attention to such orders. Internationalism was not to be dragooned; it must be voluntary on the part of all concerned. What was done must be done willingly, and no orders could be accepted.

Dr. DEJACE replied that the criticisms just made by Dr. Blondel were a good example of the great difficulty of international action and organisation. The Hague Permanent Committee had told the French National Committee that it was to call upon all the French medical associations to elect representatives to attend the London Congress. But this was not the French way of proceeding, and of some 200 organisations only eight had responded. The Belgians, however, had received the same instruction from The Hague and had carried it out, and it had worked most smoothly and successfully. Dr. Dejace agreed that arbitrary methods would never succeed in bringing about international organisation.

Professor TAMBURINI thought that the mission of the Permanent Committee at The Hague was to endeavour to coördinate and not to give out orders.

Dr. CECCHERELLI, bringing the debate back to press affairs, said that the International Committee of the International Association of the Medical Press had done a good deal of useful, practical work. What was now

particularly needed was some improvement in the reporting of the extemporary discussions that took place at the congresses. So far as the papers read were concerned, they might all be published in a volume, thus rendering a congress unnecessary. The real use of a congress was to bring the author of a paper face to face with competent critics. There should be more time for discussion in the sections, and a fuller report of the discussions should be forthcoming in the medical press.

The committee then discussed the possibility of employing shorthand writers, but the difference of language would need more than a hundred reporters when there were more than 20 sections, and they would have to be brought from abroad, for the local reporters only understood, as a rule, the language of the country where the congress met.

Mr. ADOLPHE SMITH pointed out that the situation might be improved if more attention was paid to the question of translations. Sections were badly attended and discussion flagged because members were wearied listening for hours to speakers they could not understand. But they would take heart if they knew a translation would be forthcoming. With more translations the discussions would be more effective and interesting, and there would not then be any need for such an enormous staff of reporters. In London the leading medical journals were already taking measures, with the aid of the organisers of next year's Medical Congress, to effect improvement.

The Afternoon Sitting.—The Accounts of the Association.

The question of the volume of transactions which the association proposed to issue was discussed at length, the following being the outcome. The difficulty lay partly in the cost of the issue and partly in what should be said about the journals affiliated to the association. It was thought that a list of these journals if published would be useful from several points of view, as would be the record of the resolutions carried at the congresses and of the proceedings at general or committee meetings of the association. The cost of this publication would not be covered by its sale, though perhaps some advertisements might be obtained. At the Monaco conference it was decided that each nationality should pay 20 francs for every member on the committee. Germany, which included the German-speaking portion of Austria, was allotted four members, but no other nationality has more than three and some only one representative on the International Committee. This does not constitute a large income, but as yet no heavy expense has been incurred. Now, however, the volume it was proposed to produce would probably cost about £60; already £14 were due to the printer for printing, though he had been compelled to distribute the type after keeping it standing for several years. It would probably be necessary to print 1500 copies. Each national branch might have a copy for every member and 25 per cent. more for future contingencies. Some also should be sent to medical public libraries. The cost and labour of sending out the copies would be no light matter. At Budapest the special printing needed by the International Association of the Medical Press was included in the general printing for the Medical Congress, and therefore did not cost the association anything, but it did cost the association £6 8*s.* to send out these reports of proceedings which had been printed gratuitously. It was therefore time to look more closely to the finances of the association. The cost of postage had been incurred by the general secretary all these years and no charge had been made, but such an absence of business methods could not continue indefinitely.

The List of Affiliated Journals.

A very long discussion now ensued because some members proposed that instead of merely giving the name of each paper, that of its editor and publisher, the date of its foundation, its size and price, a photographic reproduction of its title-page should be published. It was pointed out that if this was easy for countries that had only very few but important journals, it was quite impossible in countries with several hundred publications. The cost would then be enormous, and such a bulky volume would not interest anybody, but much time was spent in discussing this matter without any practical issue. The suggestion that a monogram might appear on the title-page of affiliated papers was also made, but the difficulties were recognised of interfering with the general design of the first page of journals. It was decided that on this point each paper should suit its own convenience.

The Assimilation of Medical Terminology.

The committee now proceeded to discuss the question of Medical Nomenclature.

The GENERAL SECRETARY urged it should be possible to agree upon rules for terminology, and especially for the giving of new names. The press, Dr. BLONDEL thought, should be able to help in these matters, though objections had been raised to the press attempting to decide on nomenclature, and in particular the accusation was brought of endeavouring to rob a discoverer or an inventor of glory to which he was entitled. The ideal thing, said Dr. Blondel, would be to assimilate scientific terminology in all languages using Latin for this purpose, as Latin names were the most easy to recognise. In many countries, however, medical historians held that it was fair and useful to put the names of authors against their discoveries. "But to satisfy personal pride, even though quite legitimate, are we," asked Dr. Blondel, "to cause confusion by giving the same illness different names in different countries? In surgical operations the name of the author does not explain the sort of operation intended. Where a long description of symptoms is intended the author's name constitutes the shortest description, but the same author's name must be used by all countries. Otherwise a Latin or Greek word should be used, preferably a Latin word, and in any case not half Latin and half Greek."

Mr. L. E. CREASY (London) here pointed out that in skin and eye diseases the terminology was especially complex. We could not, he said, abolish accepted terms, but we might settle terms not yet universally adopted.

Professor Dr. RUDOLF LENNHOFF (Berlin), speaking on behalf of the German Association of the Medical Press, urged that we should concentrate our efforts on new words. They were coming forward in the course of a very few years by the hundred, and that implied more work than the association could cope with easily. At the same time the International Medical Press was better able to act in such a matter than any one else, for it absolutely held the keys of the situation.

The President, Dr. DEJACE (Belgium), urged that one article might at least be published in the course of each year in every one of the affiliated papers dealing with the subject, insisting on its importance and appealing especially to the younger members of the medical profession to try for international uniformity in nomenclature.

A resolution was now drawn up affirming first that the International Association of the Medical Press continued to take interest in the assimilation of medical terminology. It would issue a circular recommending that in new medical nomenclature the names of the authors should be avoided and that Latin or Greek, preferably Latin, should be used, but without mixing the two languages. In regard to the past, the international term should be added to the national term. As an illustration of the latter clause it was mentioned that we have *varicella* in Latin, *varicelle* in French, *windpocken* in German, and *chicken-pox* in English. Each nationality might maintain its own word, but should add *varicella* afterwards. The resolution to this effect having been unanimously accepted, Dr. Blondel was anxious that it should henceforth be known as the decision of the Rome committee.

The Hospitality of the Italian Press.

This exhausted the agenda, and after the exchange of the usual compliments the committee adjourned, to meet again in London next year, two days before the General International Medical Congress. But though there were no further business gatherings the representatives of the medical press had two other and very pleasant opportunities of meeting each other. The first followed immediately after our unpleasant experiences at the opening ceremony of the Congress on Tuberculosis. We were all invited to lunch with Professor Agusto Tamburini at the Hôtel de Russie. Here in a spacious room with bow window giving on to a beautiful garden we were served with an admirable *déjeuner*, and regaled also with some very cordial and eloquent speeches. Professor Tamburini also enrolled us all as honorary members of the Associazione della Stampa Periodica Italiana, which has extensive premises overlooking the Piazza Colonna, where the leading newspapers of all countries can be read in quiet

and comfort or theatre performances be heard by telephone. On Tuesday, the 16th, we met again at the offices of *Il Policlinico*, and finally drank to each other and to the journals we represented. Altogether, whatever criticisms may be made of the Congress, the press has been admirably received. From the very first we have felt we were among colleagues who understood our difficulties and responsibilities and were determined to help us in every way.

THE GERMAN BALNEOLOGICAL CONGRESS.

(FROM OUR BERLIN CORRESPONDENT.)

THE German Balneological Society held its annual meeting in Berlin during March, Professor BRIEGER being in the chair.

Therapy of Diseases of the Heart and Blood-vessels.

Professor BRIEGER explained the different hydriatic procedures, laying stress especially on an accurate examination of the strength of the heart, upon which the mode and intensity of the procedure must depend.

Professor STRAUSS (Berlin) spoke on diet in these diseases. The preservation of the strength of the heart must be the first principle: over-feeding must be done away. The Karell cure might be useful, but for a very short time only; coffee, tea, spirits, and bouillon must be avoided. Concerning the quantity of fluid allowed, he said that Oertel's views were somewhat exaggerated, but that the quantity of water must be reduced except in affections of the kidneys.

Professor GOLDSCHEIDER spoke on syphilis of the aorta, which was, according to him, very frequent and happened more often in men than in women. He said that arterio-sclerosis was often caused by syphilis, but that a differential diagnosis between a syphilitic aneurysm and an aneurysm caused by arterio-sclerosis without syphilis was sometimes impossible.

Dr. GRÖDEL (Nauheim) discussed the balneotherapy of chronic diseases of the heart, saying that warm brine baths were the most effective remedy in these diseases provided that they were administered in a reasonable way. The curative action depended on the thermic irritant. The carbonic acid produced a feeling of warmth, so that these baths were better endured than ordinary ones. The bath also produced an increased tonus of the vessels and more powerful action of the heart. Warm brine baths were indicated in diseases of the heart and the vessels where the circulation must be stimulated. In cases without a reserve strength of the heart with an enormous blood pressure the warm brine baths are contra-indicated; the same was the case in Bright's disease and apoplexy.

Professor BICKEL (Berlin) reported physiological researches on the action of baths on the circulation. In cardiac diseases with an increased blood pressure oxygen baths were indicated, whilst carbonic-acid baths might be prescribed where the cardiac strength was diminished but a reserve power still existed. Generally the oxygen bath was milder than the carbonic-acid bath.

Dr. BRÜNS (Marburg) spoke on the treatment of circulatory troubles by respiration in rarefied air. This method was indicated in cases of cardiac insufficiency with emphysema and chronic bronchitis, in asthma, and in arterio-sclerotic conditions of the heart.

Various Papers.—Radium Therapy.

Dr. PFEIFFER (Wiesbaden) reported that in diabetes the sugar had disappeared under the influence of thermal baths without any antidiabetic diet.

Professor GRUBE (Neuenahr) discussed the Etiology and Pathology of Cholelithiasis. By recent researches it appeared very likely that a congestion of the bile was the principal cause of cholelithiasis. This happened especially in pregnancy, so that the disease was four times more frequent in women than in men. Of 613 women suffering from cholelithiasis only 44 had been childless.

Professor KÜTTNER (Berlin) read a paper on Nervous Vomiting. It might have its origin, he said, either in the gastro-intestinal canal or in the central nervous system. The differential diagnosis between nervous vomiting and gastric crises in tabes had become more easy by Wassermann's reaction. Gastric crisis might be confounded with a certain form of vomition described by the late Professor Leyden and termed "periodical vomition."

Dr. FÜRSTENBERG (Berlin) spoke on the Progress of Radium Therapy, especially its influence on gout, rheumatism, and sleeplessness.

Dr. KEMEN (Kreuznach) discussed the different methods of the administration of radium. According to him the drinking of radium water was preferable to the inhalation of radium emanation.

Professor STICKER (Berlin) reported the results obtained by radium in the therapy of malignant growth. Cancroids of the skin might be totally cured by radium.

Professor LAZARUS (Berlin) spoke on radium emanation as the alleged curative agent of natural springs. He drew attention to the fact that the springs contained so small a quantity of radium that any effect was very unlikely. The curative effect of springs was not in proportion to their content of radium.

Other papers read before the Congress concerned seasickness, enlargement of the prostate, hysteria, diabetes, and other subjects.

CHOLERA AND PLAGUE IN THE NEAR EAST.

(FROM THE BRITISH DELEGATE TO THE CONSTANTINOPLE BOARD OF HEALTH.)

Cholera in the Turkish Empire.

THE season is rapidly approaching when the annual reappearance of cholera in this country may with only too great certainty be expected to occur. Revival would perhaps have been a more appropriate word than reappearance, since there is reason to believe that the disease has not been entirely absent from some parts of the country through the whole winter. Regular bulletins have ceased to be published for some time, but information has been received at irregular intervals from certain parts of Albania, Syria, Asia Minor, and the Yemen, and it appears that in some of these provinces, as also in Constantinople itself, the cholera infection has never completely died out.

In Constantinople 2 cases of the disease were seen on Feb. 2nd and 3rd, one occurring in the 1st Battalion of Tirailleurs stationed at the Yildiz barracks and the other in the Taxim barracks. On the 24th and 25th of the same month two other suspected cases in the troops of the capital were reported. Finally, on the 9th inst. a suspected case occurred on board a coal-lighter which had come from Guemlek, on the Marmara, and was anchored off Arnaoutkeui on the Bosphorus. The boat with all on board was sent to the lazaret of Kavak, at the north end of the Bosphorus, where a bacteriological examination of the patient's dejecta was made. The result is still uncertain at the moment of writing.

In Albania cholera has been present in sporadic form among troops and in the inhabitants of certain farms, situated in the neighbourhood of Loros. Between Jan. 24th and March 9th cases continued to occur at intervals, and at least 29 cases with 6 deaths have been officially reported.

Cholera has also been present in recent weeks at Adana, Tarsus, and in the neighbourhood, near the south coast of Asia Minor. At Adana, which was free from the disease at the beginning of the year, the disease reappeared on Jan. 18th; from then to the 21st 15 cases with 6 deaths were recorded, followed by 10 cases and 9 deaths between Jan. 21st and 28th. Sixteen days ensued without a case; then between Feb. 13th and 20th there were 2 cases with 1 death; on March 4th another case was seen, and the later records are as follows:—

March	12th to 21st	.....	5	cases, 2	deaths.
,,	20th (*sic*) to 25th	.....	9	,, 2	,,
,,	25th to April 1st	.....	7	,, 4	,,
April	1st to ,, 8th	.....	9	,, 3	,,

At Tarsus cholera reappeared towards the end of January; between Jan. 21st and 28th 3 cases with 3 deaths occurred; in the eight days ending Feb. 5th there were 6 cases with 5 deaths, and in the eight days ending Feb. 13th 3 cases with 3 deaths. Since the last-named date Tarsus appears to have been free from the disease. But more recently cholera

has attacked the workmen employed in the work connected with the prolongation of the Bagdad railway, and shows signs of still spreading. At Djihan 2 cases with 2 deaths occurred before March 4th, and 1 fatal case between April 1st and 8th. At Ak-kiupru, Bozanti, and Yenidjeh 18 cases with 6 deaths were recorded among the railway labourers between March 12th and 21st; at Yenidjeh 2 cases with 1 death occurred between March 20th and 25th, and 2 cases with 1 death from March 25th to April 1st. At Ak-kiupru and Bozanti 12 cases with 1 death were recorded between March 25th and April 1st, and in those two places and Yenidjeh together there were 5 cases with 6 deaths between April 1st and 8th. A further extension of this epidemic appears to be only too probable.

In the northern parts of Syria cholera was present at the beginning of the year. On Jan. 1st 8 cases with 8 deaths were reported from Nezib, near Aleppo; between Jan. 3rd and 5th 3 cases with 3 deaths occurred here, and none have been reported since. At Aintab 2 cases with 2 deaths were recorded before Jan. 5th, and 2 cases with 2 deaths between the 5th and 8th. At Biredjik, on the Euphrates, an imported case was seen on Jan. 8th; 2 cases with 2 deaths occurred here between Jan. 8th and 10th, 3 cases with 3 deaths between the 10th and 12th, and 2 cases with 2 deaths between the 12th and 14th. Since then no further cases have been reported. At Bomitch 6 cases, all fatal, occurred before Jan. 24th. At Aleppo itself cholera reappeared on Jan. 23rd, when a single case was seen, followed by 5 cases with 3 deaths between the 23rd and 25th. From then to Feb. 5th about a score of cases, and half that number of deaths were reported from here. From Feb. 5th to 19th no more cases occurred; but from Feb. 19th to March 16th about a dozen cases and nearly as many deaths were recorded. After the 16th Aleppo seems to have been free from the disease. On April 4th a suspected case was seen at Antioch, and on the 8th two more (apparently certain) cases were registered here.

In the Yemen cholera was more or less epidemic at the close of the year 1911; in the last nine days of that year 23 cases with 12 deaths were recorded in the military hospital at Hodeidah, and several cases occurred also at Ras-el-Kiatib to the north of that port. Early in January the disease appears to have died out here, and from Jan. 18th bulletins have ceased to be issued. Owing to the war, however, and the blockade of the Yemen coasts, news is not easily obtained from these regions.

It may be mentioned, *en passant*, that the Italians recently extended the blockaded zone so as to include Camaran, Salif, and Loheia. All communication between Camaran and the mainland was stopped, and as the pilgrim season is shortly approaching, when tens of thousands of pilgrims may be expected at the Camaran lazaret, the prospect for that important institution was a serious one. Representations were, however, made to the Italian Government, and Camaran has now been excluded from the blockaded zone, and Italy has declared that she will not interfere with the pilgrim traffic to and from that island. Some difficulties must, however, arise in connexion with the provisioning of the lazaret, and others have already arisen in connexion with the sanitary service in the other ports in these regions. The medical officer appointed to Hodeidah has for weeks past been unable to join his post; one sanitary clerk was arrested on his way to the Yemen and carried to Massowah; and the sanitary office of Confudah, the chief port of Assyr, was burnt to the ground during the bombardment of that town some weeks ago.

Plague in the Kirghiz Steppes.

But little news has been recently received respecting the prevalence of plague in the Kirghiz steppes. The last bulletin issued stated that between Jan. 1st (14th) and Feb. 2nd (15th) 9 fatal cases of the disease occurred in four Kirghiz families at Tapalan, in the eighth arrondissement of the Kamysh-Samara district (Astrakhan government). In an isolation camp near, to which contacts had been removed, a woman fell ill on Feb. 3rd (16th) and died on the following day.

An article of some length on the plague endemic in these regions appeared in the *Vratch* of Feb. 18th (No. 7), from the pen of Dr. Palmof, who recently visited the plague centres. The article deals mostly with the measures taken and needed, and adds but little to our knowledge of the epidemiology of the disease in this part of the world.

Plague at Bushire.

Plague has reappeared at Bushire, on the Persian shore of the Persian Gulf. The disease caused an epidemic here of some severity both in 1910 and 1911. The present revival began early in February; the following have been the weekly returns:—

Week ending	Feb.	10th	.....	3 cases,	1 death	(and 4 suspected deaths)
,,	,,	17th	.....	6 cases,	1 death	
,,	,,	24th	.....	10 ,,	3 deaths	
,,	March	2nd	.....	12 ,,	9 ,,	
,,	,,	9th	.....	12 ,,	5 ,,	
,,	,,	16th	.....	32 ,,	24 ,,	
,,	,,	23rd	.....	12 ,,	6 ,,	
,,	,,	30th	.....	43 ,,	31 ,,	
,,	April	6th	.....	78 ,,	51 ,,	

It will be seen that the epidemic is still a rising one here. No case has been reported from other ports in the Gulf.

Plague at Basra.

Basra is situated some 60 miles from the head of the Gulf, on the Shatt-ul-Arab river. Two cases of plague were seen here on March 26th, on a ship from Bombay that had touched at Bushire; both patients were pilgrims from the latter port. Two more cases with one death occurred on March 27th in the Basra lazaret, among the contacts isolated from the same ship.

Plague at Jeddah.

Since my last letter[1] there have been but few sporadic cases of plague in Jeddah. Between Jan. 13th and Feb. 18th only 8 cases with 6 deaths had been recorded. Between Feb. 18th and March 4th there were 4 cases with 2 deaths; and since the last-named date about half-a-dozen cases, with as many deaths, have been reported. The outbreak here is the mildest that there has been for several years past.

Constantinople, April 13th.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Medical Inspection of Schools.

THE annual report of Dr. G. A. Auden, medical superintendent of schools for Birmingham, shows that the number of children examined has reached a total of 28,067. Over 3000 were found to have defective vision, 1211 defective hearing, 3370 nose and throat defects, and 839 doubtful or certain pulmonary tuberculosis. During the year 10,144 children were excluded from school on account of measles, scarlet fever, and diphtheria. Spectacles were prescribed in 791 cases, but of these only 336 actually obtained them. Thus 57·5 per cent. of the time and work of the medical staff had been wasted. The cost of the spectacles seems to be the chief reason for this, and the difficulty of raising the necessary funds by small instalments without banking facilities is an important factor. The experience of the care committees abundantly proves that with proper organisation much can be done in this connexion. In fact, many of the children examined have been those sent up by the care committees which have guaranteed the necessary outlay. Except for this fact the number of spectacles obtained would have been still further reduced. Tonsils and adenoids are a serious problem. The number of cases are out of all proportion to the facilities for treatment. A large proportion of the 528 cases of otorrhœa and of the 1211 cases of deafness may be traced to this cause. Speech defects were present in 169 children. The campaign against verminous conditions has been vigorously pursued and there is considerable improvement. Out of 63,714 children, 36,965 were found to be clean. Under the heading of tuberculosis it is reported that 173 cases were considered doubtful. The rarity of pulmonary tuberculosis of the adult type in children is again brought out. Dr. Auden remarks upon the importance of the problem of educating such children. Any complete scheme should include day classes under open-air conditions for those children whose home environment is satisfactory and a residential sanatorium for such children whose homes are a menace to their physical improvement. In order to fight the

[1] THE LANCET, March 9th, p. 689

disease effectively it must be regarded less as an individual infection than as a family disease in which it is necessary to exercise a watchful care upon the other members of the household.

Midland Hospital for Skin and Urinary Diseases.

The annual report of this hospital states that during the past year the total attendances of patients showed an increase of 859 over the previous year, the total attendance being 42,428. Of this number, 5725 were made in the newly organised and well-equipped electrical department. The number of outpatients was 6768. The annual income was again insufficient to meet the expenditure, the deficiency being £422, mainly due to the increase in the number of cases demanding new and special forms of electrical and radium treatment. At the annual meeting of the governors it was suggested that when the Insurance Act came into operation the patients should be divided into two classes—the State-aided and those who were not—and that the former should be expected to contribute something towards their treatment. The charitable public could not be expected to support hospitals to help State-aided people.

Cripples and Tuberculosis.

Mrs. Hume Pinsent has called the attention of the education committee to the fact that 42 per cent. of the cripple cases in the schools were due to tubercular disease. The education of a cripple child costs the country as much as that of four normal children. It is therefore important, if only from an economical point of view, to find means of checking the infection of these children.

April 30th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Tuberculosis Committee's Report and Ireland.

THE Departmental Committee on Tuberculosis probably found itself in difficulty with regard to Ireland, as the conditions in Ireland differ much from those in England. Thus, the Irish population is largely rural, whilst the English is largely urban. The number of deaths from tuberculosis per 1000 of the Irish population is much higher than in the rest of the United Kingdom. In Ireland, again, the county councils have no public health functions, and there are no county medical officers of health, while the compulsory notification of tuberculosis is not universal. In consequence of these and other differences the Committee makes certain special recommendations with regard to Ireland. The Committee recommends immediate provision for: (*a*) The compulsory notification of pulmonary tuberculosis in all districts in Ireland; (*b*) entrusting county councils with administrative functions for dealing with public health and for the appointment of county medical officers of health; and (*c*) the medical inspection and treatment of school children. The committee further considers that a fixed proportion of the grant to Ireland should be earmarked for providing institutional treatment for tuberculous children. The committee is also of opinion that so far as it may be found practicable aid from the grant may be afforded to those voluntary institutions which are found to be doing good work in the treatment and prevention of tuberculosis and which are willing to provide further accommodation for the treatment of tuberculous patients. The committee expresses its appreciation of the work done in Ireland by the Women's National Health Association, and it is of opinion that every effort should be made to assist and develop the work of the association. There is no question that this interim report will be welcomed by all health reformers in Ireland, and that if the public authorities can only be stimulated to adopt the suggestions made an immense improvement in the incidence of tuberculosis in Ireland will take place. In this interim report there is no ruling on the relation between milk and the disease. This question should be faced fairly when the full report is finally agreed upon.

High Death-rate in Dublin.

The death-rate in Dublin for the week ending April 20th was exceptionally high, 29·1 per 1000. The high mortality was chiefly due to pneumonia and diseases of the respiratory organs. The rate was the highest of any European city as given in the weekly returns of the Registrar-General for Ireland, and more than twice the rate in London for the same week.

A Coroner and his Fees as a Witness at Inquests.

An interesting case between a county coroner and the county council was heard at the recent Queen's County quarter sessions before Judge Fitzgerald. Mr. T. Higgins is coroner for the Queen's County, and is paid a salary by the county council. On two occasions recently inquests were held on persons who had been attended during life by Mr. Higgins. He was therefore incapacitated from acting as coroner, and in each case the inquest was held by two magistrates. Mr. Higgins was summoned to give evidence, and in each case the magistrates ordered a fee of 1 guinea to be paid to him. The county council refused to pay, stating that if Mr. Higgins had not been a witness he would have had to attend as coroner. The county court judge gave a decree for the amount claimed.

University Representation under the Government of Ireland Bill.

At present Dublin is the only University in Ireland to send representatives to Parliament. The Government of Ireland Bill proposes that it should in future send its representatives to the Irish House of Commons, but proposes no representation for any other university. This position has given rise to some flutterings in university circles. At a meeting of Convocation of the National University, held last Saturday, the following resolution was unanimously adopted:—

That, while refraining from expressing any view on the general question of university representation, this Convocation is of opinion that, in the event of a redistribution of Irish seats becoming necessary, there should be equality of Parliamentary representation in the three Irish universities.

Belfast Medical Men and the Insurance Act.

A general meeting of the medical practitioners of Belfast was held in the Medical Institute under the auspices of the Ulster Medical Society, the British Medical Association, and the Belfast Medical Guild, on April 25th. Dr. H. L. McKisack (President of the Ulster Medical Society) occupied the chair, and there was a large attendance. A local medical committee—60 in number—was appointed in accordance with Clause 62 of the Insurance Act. A very strong protest was made as to the action of the Irish Insurance Commissioners in not nominating, on their Advisory Committee, any medical men from Belfast, the largest industrial city in Ireland. It was also passed that five medical men out of an advisory committee of 48 was quite too small a medical representation, and that the attention of the Insurance Commissioners should be directed to the fact that three-fifths of the doctors on the Irish Advisory Committee belonged to the Poor-law service. Further, it was decided that if the Insurance Commissioners agreed to appoint a Belfast medical man on this Advisory Committee for Ireland his choice should be left to the medical profession. The last business to come before this meeting was a report from a committee appointed by the medical profession to consider the midwives clauses of the Belfast Corporation Bill (1911). This led to an amusing discussion, during which the extraordinary fact was disclosed that the clauses (or some of them) referring to midwives in the Belfast Corporation Act (1911) had never even been seen by some of the medical members of the Belfast corporation until the Bill was passed. It was finally decided—the medical members of the public health committee present agreeing—that the only way out of the *impasse* was to have a mutual conference between the public health committee of Belfast and a committee of the medical profession of the city. In this way it should be possible to see if rules can be drawn up based on such a carelessly drawn Act.

Rathfriland Water-supply.

The Local Government Board has made a Provisional Order empowering Newry (No. 1) rural council to put in force the powers of the Land Clauses Acts in respect to the purchase and taking, otherwise than by agreement, of certain lands, water, and rights for the purpose of providing a supply of water for Rathfriland and neighbourhood. This Order has to be submitted to Parliament for confirmation.

April 30th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Paris Water-Supply.

THE problem of the Paris water-supply during the summer has strongly occupied the Parisian mind during the past year. I have on various occasions reported the measures taken to increase the quantity at the disposition of the public. The very early and rapid arrival of spring recalls attention to this question. The works at St. Maur have been pushed forward with such activity that from May 15th the reservoirs will be able to supply an additional 40,000 cubic metres of filtered water, and by the end of the month a supply of another 40,000 metres will be added. Finally, in July, a further 20,000 metres of spring water will be available, 10,000 from the watersheds of Villemer, which can be sterilised by ozonisation, and the remainder from supplementary supplies drawn from the subterranean sources of the Loing and Lunain.

The Treatment of Backward Children.

M. Raoul Dupuy, in a communication to the Academy of Sciences, on April 9th, essayed to show that backward children, although seemingly differing clinically according to each type, have numerous physio-pathological characters in common. Backward children, in short, are habitually in a state of hypotension. The examination of their blood shows a marked anæmia and hyper-leucocytosis. Radiography indicates that their ossification is retarded. The urine also gives valuable indications, for in nearly all cases it demonstrates intoxication with skatol and indol, and shows disturbance of the liver and kidney functions by the presence of albumin, urobilin, and biliary pigments. On the other hand, in the apathetic subjects there is to be noted a retention of all the normal constituents of the urine—water, nitrogenous matter, chlorides, and phosphates; while in the unstable there is a hyper-secretion of these substances with considerable demineralisation. Dr. Dupuy insists afresh on the importance of opotherapy, which re-establishes metabolism, influences arterial pressure, and favours the maintenance of the organic and intellectual equilibrium of the individual.

The Paris Museum of Hygiene.

A museum of hygiene will soon be opened to the public in Paris. It is due to the suggestion of M. Lamarchand in 1908 that the municipal council decided on establishing it. For this purpose the presbytery of the church of Saint Leu has been appropriated, and the sum of 150,000 francs set aside for the purpose. The smallness of this subsidy has not prevented the conservator, M. Juillerat, and the adjunct conservator, M. Leroux, from bringing about some very interesting results. The museum not only comprises collections, but will constitute a school of hygiene. Conferences will be held in a large room fitted up for the purpose, tours of inspection will be organised, and regular popular instruction will be developed. In the buildings mothers will see moulages of various meats, from the very best quality to those containing parasites, such as actinomycoces and tænia. They will be taught how to avoid having palmed off on them second quality for first quality meat. They will also learn how to recognise whether a nursing child is digesting well or ill, so that the medical man may not be called in too late. Wall pictures will show children what not to do if they wish to keep well, as, for instance, not to drink out of public drinking-cups, or to pick up food that has fallen on the ground. The museum is composed of seven sections: City hygiene (the supply of water and the removal of refuse, the repair of streets, squares, and cemeteries); the hygiene of the dwelling in regard to heating, ventilation, lighting, and furnishing; the prophylaxis of contagious diseases, disinfection, sterilisation, and the organisation of bacteriological laboratories; the hygiene of community houses, such as barracks and hospitals; alimentary hygiene and the establishment of market halls and abattoirs; the hygiene of methods of transport, especially railways; social hygiene, comprising the struggle against consumption and alcoholism, and the supply of cheap dwellings. A library and a workroom will complete the institution.

The First International Congress of Comparative Pathology.

This congress will be held at the Faculty of Medicine of Paris from Oct. 17th to the 23rd. It will take cognisance, not only of diseases common to man and animals, but also of the relations that may exist between the diseases of different species. Vegetable pathology will be considered, as well as the possible relations between certain diseases of plants and those of animals. The questions on the order of the day are: Tuberculosis; diphtheria, human and avian; cancer; small-pox and vaccinia; parasites [common to man and animals; nervous affections, madness; a comparative study of cirrhoses; the pathology of the lower animals; experimental scarlet fever; the milk-supply; vegetable pathology. The president is M. Roger, professor of experimental and comparative pathology at the Faculty of Medicine. M. Garnier is secretary of the committee, and M. Grollet secretary-general.

Tuberculosis and Transport.

In reply to M. Joseph Reinach, President of the Society for Defence Against Tuberculosis, who asked M. Jean Dupuy, Minister of Public Works, what measures had been taken to prevent the dissemination of tuberculosis in railway stations and trains, the Minister detailed the measures taken by the administrations of the various railways. In making up the trains at the stations the passenger carriages are subjected to a thorough cleansing before being put into service. The floors are swept and washed with an antiseptic, the furnishings beaten, the glass and metal work cleaned, and the compartments washed. In the large stations provided with the necessary accommodation the cleansing is done by the city. During the journey, when possible, the carriages undergo a modified cleaning. Carriages with toilet accommodation have their water-closets carefully disinfected. When a traveller is recognised as, or is supposed to be, suffering from some infectious disease, he is isolated in a special compartment and the carriage he occupied is as soon as possible sent for disinfection. The passenger platforms and the waiting-rooms as much as possible are swept only when free from passengers, and the workers have instructions to see that the windows and doors of trains standing by are well closed. The sweeping is done with dampened sawdust or after watering. Finally, a prohibition against spitting is put up in the waiting-rooms and the passenger carriages, and breaches of the rule are followed by prosecution. The administration of the Ministry is at the present time considering the revision of all the Ministerial circulars regulating the hygiene of railways.

Tragic Death of a Medical Man.

A tragic event marred the general meeting of the Association of French Physicians held in Paris on April 21st. The President, Dr. Lande, had just finished his presidential address when he was struck with a cerebral hæmorrhage. He was at once taken to a hospital, where he died two days later without regaining consciousness. He was 68 years of age.

April 30th.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENTS.)

Decreasing Birth-rate among Native-born Americans.

AT a meeting of the Guild of St. Luke, held recently in New York to discuss the declining birth-rate in this country, some interesting but discouraging facts were brought out. According to one speaker the ratio of births to each marriage among American-born parents is about two, while among foreign-born parents the average is nearly four. A low birth-rate is especially the case in Massachusetts, in which State the rate is less than in France. In the United States generally, and in New York in particular, the birth-rate is lower than in France. A Boston writer said recently that the descendants of the Pilgrim Fathers are now filling Mount Auburn Cemetery, while the sons of aliens are inhabiting Commonwealth-avenue. Dr. William H. Guilfoy, registrar of vital statistics for the city of New York, furnished figures which showed that if the proportion of births among Italian parents was

represented by 46, the proportion among the Jews might be rated at 35, among the Irish at 25, and among the Americans at 14. Dr. Francis Quinlan, of the New York Polyclinic, thought that a prominent factor in the declining birth-rate was the opportunity now afforded to women to become self-supporting, and thereby to avoid the duties of wife and mother. Dr. James J. Walsh, of Fordham University, held the view that the present decline in the birth-rate was only one of those cycles frequent in history which overtake nations when the desire for power and luxury overbalances the higher motives of life. Dr. Nammack drew attention to the fact that in spite of the advance in medical science during the past 50 years resulting in reduced death-rate, improved sanitation, and the reduction of the perils of maternity, the birth-rate at the close of the nineteenth century was less by one-half than that at the close of the eighteenth century. Dr. Nammack said tables demonstrated that the American husband was responsible for this reduction in the birth-rate among native-born parents rather than the wife.

Freud's Theory Criticised.

At a recent meeting of the Neurological Section of the New York Academy of Medicine Dr. Allen Starr criticised severely the theory of Freud, that the psychological life of human beings is based on the sex instinct. He said that Freud's scientific theory was largely the result of his environment and of his manner of life. Dr. Starr believed that Freud had turned into a frivolous vein the really serious new science of psycho-analysis, by which the mental processes of patients can be as exactly and as mathematically studied as the human body is studied by the use of the microscope and scalpel. An instinct equally strong with that of sex was that of self-preservation, which in America was represented by the struggle for wealth. He recommended American physicians to recognise the equal importance of the self-preservative instinct in shaping patients' lives and mental states.

A New Tuberculosis Preventorium.

The new home at Farmingdale, New Jersey, to be known as a preventorium, will open on April 25th. This institution is the only one in the country which cares for the children of tuberculous parents. The buildings will be admirably furnished and equipped, and when completed will accommodate 100 children a year.

The Regulation of Marriage in Chicago.

As was mentioned in a recent letter,[1] the Dean of the Episcopal Cathedral in Chicago announced that in future no marriages would be celebrated in the Cathedral without the production by both bride and bridegroom of a certificate of freedom from serious organic or contagious disease. The Dean's action has since been sustained by the Bishop. It goes without saying that this action has provoked a storm of discussion. Most of the comments on the innovation have been favourable, although those best qualified to speak with authority doubt the practicability of such a scheme. At any rate, a movement of this character initiated by an eminent Churchman will have the effect of focussing public attention on the matter, and the question of eugenics will be threshed out and explained to the unscientific masses in a clearer manner than has been the case up to the present time.

National Conference on Pellagra.

In response to invitations from the State Medical Association and the State Board of Health of South Carolina, the National Association for the Study of Pellagra will hold its next triennial meeting in Columbia, S.C., on Oct. 3rd and 4th next, the week following the Washington meeting of the Fifteenth International Congress on Hygiene and Demography. Invitations are being extended to all persons interested in pellagra to participate in this meeting. The coöperation of officers of the Government Medical Services, State Boards of Health, and State Hospitals for the Insane is especially solicited. It is expected that several foreign Governments and medical organisations will be represented at the Conference. Persons wishing to present papers should address the special committee, consisting of Dr. J. W. Babcock, Dr. J. J. Watson, and Dr. J. A. Hayne, Columbia, S.C., U.S.America.

April 23rd.

[1] See THE LANCET, April 20th, p. 1027.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

The Indian Sanitary Services.

A SCHEME for the reorganisation and improvement of the sanitary services in this country has been submitted to the Secretary of State for approval, and a grant of Rs.2¼ lakhs has been sanctioned towards its introduction if approved.

Sanitation in the Punjab.

The functions of the sanitary boards in the different provinces are year by year becoming more extensive and onerous, as expenditure on sanitary matters becomes heavier. In the Punjab, where a meeting of the Sanitary Board was recently held in Lahore, schemes aggregating many lakhs of rupees are under consideration, and the board will be asked to submit recommendations as to the disposal of the special grant of Rs.6,17,000 from the Government of India to the provincial government. We understand that the amounts allotted for sanitary matters by the provincial government during the last official year just closing were approximately: Rs.5 lakhs to the Research Institute; Rs.1½ lakhs for the Sanitary Board; Rs.1 lakh for Amritsar *dhabs*; Rs.36,000 for malaria; Rs.57,000 for the Delhi *bela;* Rs.14,000 for Lahore sanitary scheme; Rs.26,000 in rewards to villagers in the Chenab colony; Rs.99,000 for the Sanitary Commissioner's establishment; and Rs.18,000 for health officers, making a total of 10 lakhs. The work of popularising sanitation in villages makes slow progress in the Punjab. A good deal, no doubt, depends on the exertions of deputy commissioners and civil surgeons. Where these officers take an active personal interest in the matter satisfactory results ensue. According to the latest administrative report, "year after year it is noticed that not much was done by village communities to improve the sanitation of their villages, and though prizes were offered they could not be awarded as they had not been earned. Among the difficulties in the way are the want of organisation in villages and the customary right of agriculturists to collect manure heaps upon common land in which the village wells are ordinarily situated." In a new colony of villages, where the roads are wider and houses are not allowed to be built close to each other, separate plots of land away from the habitations of the people are allotted for manure heaps.

Sanitation in the United Provinces.

Legislation is about to be undertaken in the United Provinces to improve the sanitation of rural areas. A Bill with this object, following generally, though not in all particulars, the recommendations of the Sanitary Conference at Naini Tal in 1908, was recently introduced into the Provincial Legislative Council at Lucknow. It was referred to a select committee.

A Sanitary Survey of Calcutta.

In Calcutta Dr. Crake, an assistant to the health officer, has just completed a sanitary survey of the northern portion of the city in about three months. This is the second sanitary survey that has taken place in India; the first, which was made in Bombay by Dr. Newell for the Improvement Trust, occupied nine months.

The Dust Trouble in India.

A leading article on this subject, which appeared recently in the *Civil and Military Gazette*, has evoked some correspondence. One correspondent blames the defective system of metalling roads. Most of the roads in cantonments and in the districts consist of a strip of metal in the centre, seldom wide enough to allow two vehicles to pass without one going on the belt of dust on either side. He suggests that roads in cantonments, and those connecting cantonments with hill stations, should be made narrower where necessary, but metalled for their entire width and tarred. As an evidence of the cast-iron conservatism of Anglo-Indian communities, which are willing to go from year to year, too content with things as they are to take active measures for their improvement, the writer cites the following objections put forward by officers and officials against his proposal: 1. There is no dust. 2. There is no more dust than there was. 3. Why worry about the dust? 4. It would cost money. 5. If money is to be spent, why not spend it on electric light?

6. We haven't all got motors. 7. Government would never sanction extra expenditure, so why try?

Indian Water-supplies.

The *Pioneer* states that the question of water-supply of Simla during the summer months may possibly give rise to some anxiety this season. There is, however, still time for rainfall in the hills—even snow has been known to fall in April, and in that case the spring-level in the catchment area would rise. The completion of the hydro-electric scheme is extremely urgent, and it is to be regretted that the action of the India Office last year caused serious delay in the programme of the works. A scheme for the improvement of the water-supply in Ajmer city has for some time been under consideration by the local authorities and the Government of India. The Government has now granted Rs. 1½ lakhs to Ajmer-Merwara, which should prove sufficient to complete the water-supply scheme, and to carry out other sanitary measures awaiting funds.

The New Delhi.

Plans are now well advanced for the accommodation of the Government of India at Delhi during the five years which may be expected to elapse while the new capital is being built. The settlement will be self-contained and will include a telegraph office and adequate provision to enable the various departments to conduct their business with dignity and comfort during the months spent at Delhi. The architecture and method of construction will be not unlike those adopted in the exhibition buildings at Allahabad. The walls will be of dudgie, the roofs of corrugated iron, with such simple decoration as this class of material admits. The buildings are to be temporary only, but they will no doubt far outlast the transition period, after which they will form a valuable asset, though their site will ultimately be only a suburb of the capital.

The Indian Budget.

The Indian Budget contains much of medical interest. £333,000 are allotted amongst the provinces for sanitation, £40,000 to the Central Research Institute for work in public hygiene, £33 000 towards the establishment of a school of tropical medicine in Calcutta, and £27,000 for Government laboratories in Burma and at Parel (Bombay).

Plague in Rajputana.

The report on sanitary matters in Rajputana for the official year 1910–11 shows that plague existed continuously during the year throughout the Rajputana States, and that 38,809 cases of plague, with 22,523 deaths, were reported. The percentage of total plague deaths to population was 1·32, and 871 towns and villages were affected. The incidence of the disease was, however, very irregular in the different states, the ratio per 10,000 of the population having been as high as 204 in Tonk, 93 in Bharatpur, 88 in Alwar, and 35 in Jaipur, and as low as 3 in Kishangarh, 1 each in Bikaner and Karauli, and less than 1 in Jhalawa and Sirohi. Notwithstanding this heavy mortality, inoculation was steadily opposed by the majority of the people of the Native States on account of prejudice and ignorance.

The New Rabies Treatment.

At a meeting of the Central Committee Association, Pasteur Institution, Southern India, held in Madras on March 13th, the Hon. Surgeon-General W. B. Bannerman, I.M.S., made an announcement regarding the new treatment for rabies now in use at Conoor and two other Pasteur Institutes in India. Dr. Hogyes, director of the Pasteur Institute, Budapest, in his method, introduced into the Indian Institute some years ago, used fresh brain, or medulla substance, emulsified with sterile salt solution. In the new treatment the same solution is acted on by carbolic acid and kept at blood-heat for twenty-four hours, which renders it inert, and enables it to be kept for some time without deterioration or contamination. It is hoped that it may be possible to send this carbolised virus to selected centres.

The Death of Frontier Medical Missionaries.

Dr. W. H. Barnett, of the Bannu Mission, died recently from blood poisoning after operating on a patient, and Dr. T. L. Pennell, who had operated on Dr. Barnett, died on March 23rd. You will have already been able to notice these events.[1] Let me add that there will be widespread sorrow not only in Bannu but along the whole borderland and in the tribal country as this sad news spreads. The mission at Bannu has for many years done splendid service in giving medical and surgical relief to all-comers, and the value of its work cannot be over-estimated. The missionaries have won the complete confidence of the people. Dr. Pennell in particular had a record never approached in the history of medical mission work on the North-West Frontier. His name was one to conjure with even amongst the wildest and most fanatical tribesmen, and he could have passed unharmed into the remotest villages. Simplicity of purpose and devotion to duty won him universal regard and affection.

The Bengal Pasteur Institute.

Shillong has now been definitely selected as the site of the Pasteur Institute, which will be the Eastern Bengal and Assam tribute to the memory of the late King Edward VII.

A New Medical College for Bombay.

In Bombay, as a memorial of the Royal visit, it is proposed to erect a new medical college.

Travelling Dispensaries.

During the year 1910–11 four travelling dispensaries were opened which worked successfully for six months in four districts of the United Provinces, visiting and attending 31,092 villagers in their homes in 2644 villages throughout the most unhealthy part of the year. The system has been extended to 1911–12.

Illicit Cocaine Traffic.

Cocaine to the extent of 75,000 grains, valued at Rs. 5250, brought ashore from the steamer *Cleopatra*, of the Austrian Lloyd Company, was recently seized at Bombay. The offenders were sentenced respectively to five and six months' rigorous imprisonment.

April 7th.

[1] THE LANCET, April 6th, p. 961.

NOTES FROM CHINA.

(FROM OUR OWN CORRESPONDENT.)

A Chinese Sanatorium.

IN the south-west corner of China is the large and important province of Yunnan (the third largest in the country), which is a mountain-covered plateau, 108,000 square miles in area and averaging from 5000 to 10,000 feet above sea level. The capital of the province, Yunnan-fu, lies within the French "sphere of influence," and a railway has been built to it from Indo-China which puts within the reach of European residents of Indo-China, South China, Siam, and Burma an unrivalled sanatorium 6500 feet high with about the most equable climate in the world, where one can live with open doors and windows all the year round and enjoy the fresh air minus the tropical heat and damp. It is well known that the present pandemic of plague arose from Yunnan, which has always been noted for the very large number of rats that overrun the populated places of the province. It is therefore interesting to note from a report sent me by Dr. A. M. Vadon, the French medical officer of Yunnan-fu, that there has been no case of plague in the capital or its environs since 1895. As so little is known, medically, about this part of the world the following extracts from Dr. Vadon's report are of interest and of value because of his extended experience of Yunnan. In spite of the lack of corporal hygiene, and notwithstanding the rank conditions of overcrowding under which the natives live, epidemics are very rare and never of great extent. Cholera, bacillary and amœbic dysenteries, and enteric fever have never been observed, although the well waters are dirty and contaminated from their close proximity to sewers and middens. During the past year there have been sporadic cases of diphtheria, mumps, chicken-pox, and small-pox. There is little enthusiasm among the people for vaccination, inoculation ("les procédés de variolisation") with pus from the pustules of a benign case being generally preferred. Some headway has, however, been made with vaccination of calf lymph (from Shanghai Municipal Laboratory) by several French-trained native doctors. The endemic affections met with are malaria, goitre, and leprosy. Malaria is mainly imported; the majority of those who have it suffer from exacerbations brought on by the altered climatic conditions of the country. But in the

marshes of the paddy fields there are anopheles maculipennis. Most of the cases are tertian; a few are quartan, but Dr. Vadon has never observed remittent or hæmoglobinuric fever cases. In the blood examinations plasmodium vivax, as also plasmodium malariæ, are most frequently seen. More rarely plasmodium falciparum is found, and always alone, without association with plasmodium vivax, which is held to explain the relative benign character of the types. Goitre is very common, more so in the surrounding villages than in the towns. Women are more frequently affected than men, and the goitrous swellings are generally "voluminous" and accompanied more often by cardio-vascular than by exophthalmic trouble. The Yunnanese pay little heed to goitre. Leprosy is fairly common. The French Government has an "asile des infirmes et incurables" in which Dr. Vadon is able to observe the lepers more closely. Of 67 cases confirmed bacteriologically during the past two years 49 were "lèpre nerveuse," 13 were "lèpre tuberculeuse," and 5 "lèpre mixte." Among Yunnanese there is a rooted belief that the commonest cause of leprosy is the ingestion of eggs. Dr. Barbezieux noted in a village where leprosy was common that various fowls showed leprous symptoms, "notamment la chute des phalanges." Nothing is said as to the habits of the Yunnanese with regard to the eating of cured fish. I am, however, told that while it enters into their dietary it is by no means a common article of consumption. No cases of tetanus or anthrax have been seen. Dr. Vadon compares the climate to that of the south of France. Europeans can stay in Yunnan for indefinitely long periods. But the high altitude sometimes provokes, among those who have newly arrived, cardio-vascular troubles which manifest themselves in slight attacks of congestion and spells of "nervosité"; but a state of acclimatisation is reached in from 10 to 15 days, when all these symptoms disappear. Residence at such a high altitude (7000 feet), though good for the healthy, entails an excessive physiological systemic change which is badly borne by those with any pathological taint. Thus people suffering from bronchitic, cardiac, or tubercular trouble, and neurasthenic and rheumatic cases, as also those suffering from chronic malaria, with enlarged spleen or cachexia, have their conditions aggravated and cannot support the change. The effect of the altitude on the Yunnanese is apparent in the morbid state of feebleness noted in most of them, and this shows itself in their excessive indolence, intellectual as well as physical, and their incapacity for sustained work. It is more marked in the indigenous race, the Lolos, than in Chinese settlers. At the same time this passivity should only be noted along with the fact that opium smoking is, or rather was till its recent enforced stoppage, a widespread habit among them. There is need of more scientific inquiry into the cause of this chronic debility, and Dr. Vadon is now devoting himself to a series of blood examinations.

Leprosy and the Cimex.

Some time ago Sir Jonathan Hutchinson, writing on this subject, remarked on the rarity of leprosy in North China, and was criticised by Dr. J. L. Maxwell, of Formosa, who, commenting on what he called "the old fable of leprosy being almost unknown in North China," gave the following notes as being the facts of the case:—

"*Shantung Province.*—Leprosy abundant; even estimated at 1 per 1000 of the population.

Manchuria.—Leprosy common.

Kansu Province.—Leprosy plentiful.

Chih-li Province.—Leprosy found but rarely.

Shansi and Shensi Provinces.—No reliable reports."

Dr. Maxwell's opinion is not altogether borne out by medical men resident in the country, and it may settle the point if I quote some of their reports, as they all agree.

Shantung.—Dr. Kautsch, senior German naval staff surgeon, from an experience of five years at the capital (Tsinan-fu), gives the ratio as 1 per 6000 patients in the Government hospital. A recent survey of the German territory of Kiachow (on the coast) yielded 40 cases of leprosy in a population of 150,000. An estimate for the whole province put the average at 1 per 10,000 of the population. Dr. Roys reports it as commonest in the central part of the province. The anæsthetic type is by far the most frequent, usually beginning in the ulnar nerve.

Manchuria.—All reports agree in saying that leprosy occurs only very rarely, and is then only seen in imported cases from the south. Dr. D. Christie, writing from Mukden, said: "During my thirty years' experience here (and many thousands of patients pass through our hands every year) I do not think I have seen more than 20 cases, and *all* of these came from one or other of the southern provinces. I have asked other doctors here and their experience is the same." Dr. de B. Daly, after 15 years' practice, wrote he had "never known of a case of leprosy in a native of Manchuria," and, among others, Dr. Learmouth, of South Manchuria, had only seen two cases since 1897, both of whom had been affected before arrival. Manchuria may thus be regarded as endemically free.

Chih-li Province.—Leprosy is present, but very rare. In 10 years' hospital experience with patients coming from a large area I have only seen two cases—one of them imported. In Tientsin, the large commercial capital, it is scarcely ever noted.

Shansi.—Two reports from this province regard the disease as "almost unknown."

It was not possible to get reliable reports from Kansu or Shensi, but enough has been said to show that, with the exception of the maritime province of Shantung, leprosy may be regarded as a rare disease throughout the greater part of North China.

Peking, April 10th.

Obituary.

FREDERICK CHARLES WALLIS, M.B., B.C. CANTAB., F.R.C.S. ENG.,

SURGEON TO CHARING CROSS HOSPITAL AND JOINT LECTURER IN SURGERY AT THE MEDICAL SCHOOL, ETC.

WE regret to announce the death of Sir Frederick Charles Wallis, which occurred at his residence in Harley-street, on April 26th, from heart failure.

Sir Frederick Wallis was born on Dec. 18th, 1859, being in his fifty-third year at the date of his death. He was educated at Gonville and Caius College, Cambridge, and took the B.A. degree in 1879. His clinical experience he gained at St. Bartholomew's Hospital, and in 1885 graduated M.B. and B.C. at Cambridge, obtaining subsequently in 1891 the Fellowship of the Royal College of Surgeons of England. His inclination was strongly in the direction of surgery, and while at St. Bartholomew's Hospital he showed considerable aptitude and skill in filling the junior appointments, and shortly after obtaining his Fellowship he was appointed assistant surgeon to Charing Cross Hospital, where he was later lecturer on minor surgery and joint lecturer on surgery. He also held the posts of surgeon to the Grosvenor Hospital and to St. Mark's Hospital, and was consulting surgeon to the Metropolitan Hospital, Kingsland-road, to St. Luke's Hostel and St. Monica's Home, the Willesden Cottage Hospital, and the British Orphan Asylum. As is indicated by his appointments, he was a thoroughly busy man, the greater part of his work being done in the special direction of surgery of the rectum. He was the author of a book on this subject entitled "The Surgery of the Rectum," which was founded on personal experience and had the practical value which is obtained in that way, and he wrote articles for the medical journals and read papers at the medical societies upon various phases of his subject. He wrote also in the medical and the lay press upon matters connected with medical education, being especially an advocate of the claims which the London student has to be placed in a position to get a medical degree upon the reasonable terms that prevail in other medical centres. A breezy speaker and a forcible writer, some of his sayings in this connexion attracted wide attention.

Sir Frederick Wallis took an active part in the formation of the Union Jack Club, of which he was a Vice-President, and last year when the Coronation honours for work done in this cause were distributed he was the recipient of a knighthood.

In 1890 he married the second daughter of the late Mr. H. Aspinall, Q.C., Attorney-General of Victoria.

A memorial service was held at St. Andrew's Church, Wells-street, on Tuesday last.

JOHN HERR MUSSER, M.D.,

OF PHILADELPHIA.

BY the death of Dr. John Herr Musser, Philadelphia, and, indeed, the United States, loses one of its foremost physicians. Dr. Musser came of a medical family, for the line of physicians started by an ancestor who was licensed to practise in Pennsylvania by William Penn, as Governor, has continued in almost unbroken succession. Dr. Musser was in his fifty-sixth year, having been born in 1856 at Strasburg, Pa. He graduated as M.D. at the University of Pennsylvania in 1877. After a period of post-graduate study in Europe, followed by a tour of service as interne in the Philadelphia Hospital, he started in practice in Philadelphia. As a physician he was regarded with great confidence by the American profession, and as a teacher also. He was professor of clinical medicine at the University of Pennsylvania. As an author he not only contributed a good deal to the medical periodicals, but he contributed articles to Hare's "System of Practical Therapeutics," the "Reference Handbook of the Medical Sciences," Keating's "Cyclopædia of Diseases of Children," the English edition of Nothnagel's "Encyclopædia of Practical Medicine," and Osler's "System of Medicine." His text-book on "Medical Diagnosis" ran through several editions, and he had only recently completed, in collaboration with the late Dr. A. O. J. Kelly, a "Handbook of Practical Treatment," the first two volumes of which were reviewed in THE LANCET of Oct. 21st, 1911, and Jan. 6th, 1912, respectively. He had been President of the American Climatological Association and of the American Medical Association. Dr. Musser was a very genial character and his death at the early age of 55 will be much deplored.

HENRY COLGATE HOLMAN, M.R.C.S. ENG., L.S.A.

THE death occurred at East Hoathly, Sussex, on April 13th, of Mr. Henry Colgate Holman, who when he retired from medical practice in 1905 was one of the oldest practitioners in the county. Born at East Hoathly on Nov. 10th, 1832, he was thus 79 years of age. His father was Mr. Henry Holman, a medical practitioner at East Hoathly. The son had a natural bent for medical work, and after being educated at Merchant Taylors' School he studied at Guy's Hospital and took the diploma of L.S.A. in 1854 and that of M.R.C.S. Eng. in the following year. On his father's death he succeeded to the practice at East Hoathly. He worked in the district for 50 years and was universally beloved and respected. He was a mine of information upon local affairs.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Leopold Thumim, of Vienna, formerly assistant to Professor Leopold Landau, professor of gynæcology, Berlin. His specialty was urology in female subjects.—Professor L. Magnus Möller, the great Stockholm specialist in dermatology and syphilis.—Dr. Elie Lambothe, of Brussels, aged 56, who was elected an honorary F.R.C.S. Eng. at the centenary of the College in 1900. His name is connected specially with gastric operations.—Dr. Adolf Seeligmüller, extraordinary professor of neurology and psychology in the University of Halle, at the age of 75. He was a pupil of Moritz Benedikt in Vienna and of Duchenne in Paris, and had been a member of the teaching staff at Halle for 36 years. He published several text-books, and wrote the article in Gerhardt on Spinal Paralysis in Children. He was one of the first physicians to write on traumatic affections considered from the neurologist's point of view.—Dr. Alfred Pribram, professor of special pathology and therapeutics in the German University of Prague. He was the author of the article on Rheumatism of the Joints in Nothnagel's "Text-book of Special Pathology and Therapeutics."—Dr. R. O. Zaubzer, of Munich, aged 78, formerly *oberarzt* of the City Hospital.—Dr. J. Chalmers Cameron, professor of midwifery and pædiatry in McGill University, Montreal.—Dr. Daniel J. Coleman, professor of midwifery in the Medical College of Virginia, Richmond.—Dr. John Herr Musser, professor of clinical medicine in the University of Pennsylvania, Philadelphia.—Dr. Elmer Brown Borland, formerly professor of hygiene in the Western Pennsylvania Medical College, Pittsburg.—Dr. James R. Tryon, formerly Director-General of the Medical Department of the United States Navy.

THE SAINT GEORGE ASSOCIATION CURE FOR THE MORPHIA HABIT.

WE have been asked by more than one correspondent whether we could give any information as to the composition of the Saint George Association cure for the morphia habit. We replied that we should be glad to submit the "cure" to analysis if a sample of it was submitted to us. Eventually a sample was obtained, and our Laboratory Department reported the presence of a large amount of morphia together with salicylic acid.

Our attention was next drawn to the following advertisement, which appeared in the *Daily Mail* of Dec. 12th, 1911, and also in the *Evening News* of Dec. 22nd, 1911:—

ORPHINE.

Laudanum, Opium, Chlorodyne, or other drug addiction permanently cured.

A painless home treatment. TRIAL BOTTLE FREE. No restrictions. Remedy gives perfect support. Trial bottle often effects cure. Physicians' intricate cases especially solicited. Address in confidence, The Saint George Association, 4, Southampton-row, London, W.C. Established 1893.

The claims made here have evidently attracted considerable attention, and in view of the indications of a serious quantity of morphia being present in the sample first sent to us we decided to obtain a further "trial sample" with the object of making a quantitative analysis. This was done. The bottle supplied contained 90 cubic centimetres of a clear brown fluid. Accompanying it was a small empty phial, or dose bottle, with a capacity of 9 cubic centimetres. The phial holds a single dose, so that the trial sample contained 10 doses. The bottle was labelled as follows: "Prepared *expressly* for Mr. ——, TRIAL." (The name of the patient is purposely omitted, and he is hereafter referred to as "Mr. X.") There was no other label and nothing else on the bottle to indicate that the fluid contained poison. A detached paper slip inside the box of medicines subsequently obtained, however, had the following words printed upon it: "This medicine is to be used with care and not given to anyone but the patient for whom it is prescribed." On the cork was a seal with the impression "St.G." in capital letters. Analysis disclosed the presence of alcohol, salicylic acid, glycerine, and morphia. The morphia was estimated and the quantity found was 1·909 per cent. The full bottle, amounting to 90 cubic centimetres of fluid, thus contained a total of 1·71 grammes of the narcotic. The dose of 9 cubic centimetres therefore contained 0·171 gramme of morphia, or 2·64 grains. Three doses, the daily intake, therefore represents 7·92 grains of morphia.

Mr. X pursued the treatment, and when the trial bottle was at an end he was next supplied with a case of 10 bottles of medicine, for which a charge of £2 10*s.* was made. The label on each was the same as that of the trial bottle, except that in the place of the word "trial" a number from 1 to 10 inclusive was printed on the label of the bottle, indicating the order in which the medicines were to be taken. The cork was sealed "St.G." The bottles all contained morphia, the amount in samples 1 to 4 inclusive being in excess of that present in the trial sample. The results of analysis were as follows:—

	Morphia in grammes per 100 cubic centimetres.	Grains per dose.	Total amount of morphia in each bottle.
No. 1	2·70	3·74	37·4 grains.
,, 2	2·46	3·40	34·0 ,,
,, 3	2·02	2·79	27·9 ,,
,, 4	2·08	2·88	28·8 ,,
,, 5	1·79	2·48	24·8 ,,
,, 6	2·00	2·77	27·7 ,,
,, 7	2·00	2·77	27·7 ,,
,, 8	1·71	2·37	23·7 ,,
,, 9	1·59	2·20	22·0 ,,
,, 10	1·42	1 96	19·6 ,,
			273·6 grains.*

* Total amount of morphia "prepared expressly" for Mr. X's case for the first month's treatment.

With the case of bottles was sent a small tube of pills which

appeared to contain one or other of the well-known vegetable cholagogue extracts.

At the expiration of the first month a further case containing ten samples of medicines was sent, together also with another tube of pills. The charge was £2 10*s.* as before. The medicines were found again on analysis to contain a considerable quantity of morphia, as is shown in the following results:—

	Morphia in grammes per 100 cubic centimetres.	Grains per dose.	Total amount of morphia in each bottle.
No. 1	1·539	2·13	21·3 grains.
,, 2	1·368	1·90	19·0 ,,
,, 3	1·225	1·70	17·0 ,,
,, 4	1·487	2·06	20·6 ,,
,, 5	1·311	1·82	18·2 ,,
,, 6	0·833	1·15	11·5 ,,
,, 7	0·769	1·06	10·6 ,,
,, 8	0·712	0·98	9·8 ,,
,, 9	1·140	1·58	15·8 ,,
,, 10	0·969	1·34	13·4 ,,
			157·2 grains.*

* Total amount of morphia "prepared expressly" for Mr. X's case for the second month's treatment.

So far we have complied with the request of our correspondents by placing before them the information they required as to the composition of the Saint George Association cure for the morphia habit. The treatment, we understand, requires from two to six months, but we do not propose to investigate the matter beyond a two months' course, as the materials which our analytical inquiry has furnished up to this point appear to us to be sufficient to indicate the methods adopted by "The Saint George Association with its affiliated physicians and chemists" for the treatment of drug addiction.

The methods of diagnosis of the Saint George Association and the instructions given through the post to Mr. X by its "physicians and chemists" were as follows. The diagnosis of the condition to be treated was made without any interview, by obtaining written answers to a list of questions, and though Mr. X was asked whether he could visit the London office of the association he was not urged in any way to do so. The association is apparently content to receive these replies written presumably by drug *habitués*, who are notoriously untruthful, and on this doubtful foundation the treatment to be adopted is based. Accompanying his "treatment" was a printed form of instructions and a letter; in the former was included the order that the medicine should be taken three times daily, and it was insisted that he should not take any narcotic of whatever nature while taking the remedy. In the letter he was advised to take an extra dose or half dose should he find "that the craving for the drug becomes rather acute." The analysis shows that three doses of this medicine in bottle No. 1 of the first batch sent contain about 11½ grains of morphia. Mr. X stated, in his replies to questions, that he was taking daily about 15 grains of morphia hypodermically, and further stated that his addiction was one of three years' duration. He was therefore expected to substitute for these 15 grains some 11½ grains to be taken by the mouth, and to entirely discard his syringe.

It is well known that morphia taken by the mouth is, as a general rule, in such cases no substitute for the drug taken hypodermically, and the attempted substitution in the case of an uncontrolled person would result in his taking his drug by the mouth plus the customary, or nearly the customary, hypodermic dose, thus increasing the daily intake of morphia. Those who have had practical experience of the treatment of the unfortunate victims of the morphia habit are well aware of the dissimilarity of each case—the personal factor cannot be ignored, and rarely can any two cases be treated on exactly similar lines. Further, many concomitant ailments and disturbances, such as neuralgias, depression, diarrhœa, insomnia, dyspepsia, restlessness, &c., have to be dealt with which require the constant attention and skill of the physician.

The Saint George Association attempts to grapple with the problem of the treatment of the habit and its accompanying disorders by distributing to its patrons a few aperient pills, some printed consolatory suggestions, and last, but not least, a solution of morphia.

THE NATIONAL INSURANCE ACT.

THE GOVERNMENT AND THE MEDICAL PROFESSION.

THE debate in the House of Commons on Wednesday night, May 1st, on the position of the National Insurance Act, under which as yet no suitable provision has been made for the administration of medical benefits, was instructive. It will be seen by our report of the proceedings in the House of Commons that the Chancellor of the Exchequer raised no opposition to the acceptance of a motion by Mr. J. A. Grant, the Member for the Egremont Division of Cumberland, which set out "that immediate steps should be taken by the Government to ensure the coöperation of the medical profession in the administration of the Act," and which added that until such coöperation was ensured the Act could not efficiently provide medical benefit. It was clear that the motion could not have been resisted, and Mr. Lloyd George's speech was a plea for patience. He assured the House that the Advisory Committee, on which there was a large medical representation, was prepared to deal with the subjects under dispute.

THE NATIONAL MEDICAL UNION.

We have received a communication from the Press Committee of the National Medical Union to the following effect: The time fixed by the Government for the National Insurance Act to come into force is drawing near, and yet the medical profession is apparently as far off as ever from getting its just terms. It argues great faith on the part of medical men to hope that at the eleventh hour, in spite of the Chancellor's utterances, the modest terms of the profession may be granted. The members of the National Medical Union have watched with interest the proceedings of the State Sickness Insurance Committee, which put forth the minimum demands in a communication to the National Health Insurance Joint Committee on Feb. 29th. Nothing but a formal acknowledgment of the letter was received up to April 12th, when a further letter had to be written asking for a detailed reply. On April 15th a reply came that all such representations as those of the British Medical Association would be carefully considered in connexion with the preparation of the regulations for the administration of medical benefit. That statement was rounded off with an assertion that the advice and assistance of the Advisory Committee, on which the British Medical Association had representatives, would be available. The attitude of the National Medical Union, which was not in favour of any medical organisation sending representatives to the Advisory Committee until the minimum demands of the profession were fully and unequivocally granted, is thus, it maintains, once more justified, and the need for an organisation such as it is thus once more proved.

The Union further declares that it has done its utmost to organise the profession in its resistance to the Act as it stands at present; to insist that the British Medical Association Representatives shall voice the opinions of their constituents; to bring about affiliation of kindred organisations so as to get united action; to elaborate a scheme of medical service, to be submitted to the British Medical Association in the event of medical benefit being suspended; and to endeavour to solve the difficulties of getting rid of the present club system. Its immediate endeavour is to influence the elections to the Council of the British Medical Association, in order to strengthen that body; and the names of suitable candidates will shortly be suggested.

LEWISHAM PROVISIONAL MEDICAL COMMITTEE.

This committee has issued a letter to all medical practitioners resident in the borough of Lewisham asking (1) whether those holding contract appointments are prepared, if called upon, to place their resignations in the hands of the committee in order to obtain higher rates of remuneration, and (2) whether those not holding contract appointments are prepared to refuse acceptance of any thus vacated. "Contract practice" is defined as "agreement to attend at a fixed

rate *insured persons*, who are members of Friendly Societies, Slate Clubs, and Dispensaries." The delay in the issue of "Regulations for administering medical benefits" by the National Health Commission has thus given the provisional committee time to concentrate its efforts on organisation. When the District Insurance Committee is elected and the regulations are issued, it is proposed to call a mass meeting of all the medical men in the borough and abide by their decision, subject to the approval of the British Medical Association.

WANDSWORTH PROVISIONAL MEDICAL COMMITTEE.

The members of the Provisional Medical Committee for the Wandsworth metropolitan area have now been elected by a postal vote. This area includes Balham, Battersea, Clapham, Putney, Wandsworth, Tooting, and Wimbledon. The first meeting will be held to-day (Friday, May 3rd) at 3.30 P.M. at the Crichton Restaurant, Clapham Junction.

MEETING OF RAILWAY MEN'S MEDICAL OFFICERS.

A meeting of medical officers of the Great Central Railway and Joint Lines Friendly Society was held at the Grosvenor Hotel, Manchester, on April 16th. There was an attendance of 40. The meeting was summoned because the society had lately circularised its medical officers asking for terms on which they would undertake fresh contracts outside the National Insurance Act. With a view to unanimous and concerted action it was decided to circularise the medical officers of the whole system to the effect that at the present time there could be no offer made pending the decision of the British Medical Association on the matter of contract practice.

Medical News.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the recent examinations held in Glasgow the following were successful:—

First Professional Examination.—Alfred Black, Cookstown, Co. Tyrone; Percy Hayes, Cork; Andrew Mathewson, Co. Tyrone; Clarence James Middleton, Australia; Frederick Charles Joseph Mitchell, Co. Tyrone; and Jacobus Johannes de Waal, Cape Town.

Second Professional Examination.—Oswald Brunlees, Surrey; John William Cowie, Tillicoultry; John Rennie Carrie Gordon, Glasgow; George Loudon Neil, Lesmahagow; William Lyle Paterson, Glasgow; Cawton Frank Pereira, Bombay; Gwilym Llewelyn Pierce, Llangollen; Charles Read, Glasgow; Thomas Ross Scott, Edinburgh; John Mellon Smeaton, Glasgow; John Alexander Smith, Glasgow; and George Thomson, Glasgow.

Third Professional Examination.—Harold Damant Atherstone, Cape Colony; John Francis Bourke, Hamilton; William Laird, Glasgow; Madeline MacWilliam, Glasgow; John Morrison Milne, Dundee; Fred Miller Murray, Glasgow; Radhamadhab Prasad, Gaya, India; Violet Millicent Tracey, Glasgow; and Narain Rama Rao Ubhaya, India.

Final Examination.—Victor Thomas William Eagles, Paisley; Tom Entwisle Ferguson, Bolton; James Alfred Frost, Aherla, Co. Cork; Francis William Grant, Uddingston; Alan Ross Henry, Cape Colony; Hariharnath Hukku, Agra, India; Robert Henry Jones, North Wales; Mary Lyon-Mercado, Poona, India; Manek Bomanji Motafram, Bombay; Francis Grene Power, Brisbane, Australia; Sheikh Ghulam Rasul, India; Prabodh Chandra Ray, Bengal; Balwant Singh, India; and James Douglas Wright, Giffnock.

FOREIGN UNIVERSITY INTELLIGENCE.—*Florence:* Dr. Gaetano Pieraccini has been recognised as *privat-docent* of Medical Affections due to Accidents connected with Occupation.—*Giessen:* Dr. E. Opitz, of Düsseldorf, has been appointed to the chair of Gynæcology, in succession to Dr. v. Franqué.—*Göttingen:* Dr. A. Leber, of Berlin, has been recognised as *privat-docent* of Ophthalmology, and has been appointed Oberarzt of the Eye Clinic, in succession to Dr. Schieck.—*Padua:* Dr. Giovanni Impallomeni, of Rome, has been recognised as *privat-docent* of Orthopædic Surgery.—*Pisa:* Dr. Domenico Mirto, of Catania, has been appointed to the chair of Forensic Medicine.—*Prague (Bohemian University):* Dr. Rudolf Eiselt has been recognised as *privat-docent* of Medicine.—*Prague (German University):* Dr. I. Honl, extraordinary professor of bacteriology, has been promoted to the rank of Ordinary Professor.—*Rome:* Dr. Pio Pediconi has been recognised as *privat-docent* of Medical Pathology.—*San Francisco (Leland Stanford University):* Dr. A. B. Spalding has been appointed to the chair of Midwifery and Gynæcology.—*Saratoff:* Dr. Spasokukotski has been appointed Extraordinary Professor of Surgery.—*Turin:* Dr. Luigi Bobbio has been recognised as *privat-docent* of Surgery and Operative Medicine.—*Warsaw:* Dr. K. Orloff, of Kazan, has been appointed to the Chair of Ophthalmology.—*Würzburg:* Dr. O. Schultze, extraordinary professor, has been appointed to the chair of Anatomy, in succession to the late Dr. P. Stöhr.

UNIVERSITY COLLEGE HOSPITAL.—A course of seven lectures on the Mechanism of the Heart Beat will be delivered at University College Hospital Medical School by Dr. Thomas Lewis on Thursdays at 4 o'clock, commencing May 9th. Students and practitioners will be admitted to the lectures on presentation of visiting cards.

THERE will be a meeting at Southport of the Royal Meteorological Society, by invitation of the mayor and corporation, on Saturday next, May 11th. A popular lantern lecture, "A Chat about the Weather," will be given by Mr. W. Marriott, in the Temperance Institute, at 8 P.M.; and on Monday there will be a visit to the Marshside Anemograph Station; a luncheon party, given by the mayor to the Fellows, at 1.30 P.M.; a visit to the Fernley Observatory, Hesketh Park; and a meeting of the society in the lecture hall of the Science and Art Schools, at 5 P.M., at which papers will be read by Mr. J. Baxendell and Mr. J. S. Dines. The Fellows and their friends will dine together at 7.15 P.M., in morning dress. Fellows and others proposing to attend the meeting and the dinner are requested to communicate with the secretary, 70, Victoria-street, London, S.W., not later than Thursday next.

DONATIONS AND BEQUESTS.—The late Rev. Walter Hugh Earle Welby, who left estate of the gross value of £23,163 18*s.* 8*d.*, with net personalty £23,009 16*s.* 11*d.*, bequeathed the sums payable under two life policies as to five-twelfths to the Royal Isle of Wight County Hospital, as to five-twelfths to the Grantham Hospital, and as to one-sixth to the National Society for the Prevention of Cruelty to Children, in each case for the permanent endowment of the institution. The proceeds of the sale of the testator's books will be given to the Royal Isle of Wight County Hospital.—Under the will of the late Mr. William Johnston a sum of £10,000 is bequeathed for the purpose of endowing beds in the Western Infirmary, Royal Infirmary, and Victoria Infirmary, Glasgow, in memory of Miss Jemima Johnston, in the proportion of £4000 each to the Western and Royal Infirmaries and £2000 to the Victoria Infirmary.—At a recent meeting of the directors of the Aberdeen Royal Infirmary a cheque for £1000 was received from the residue of the estate of the late Mr. Robert Smith, of Glenmillan, to be applied in endowing a bed in the infirmary in remembrance of Mr. Smith.—The late Mrs. Moir, of Deeview, Culter, has left by will £600 to the Royal Aberdeen Hospital for Sick Children, £1300 in other bequests, and the residue of her estate to the Royal Infirmary, Aberdeen. The value of the estate is £7900

POOR-LAW MEDICAL OFFICERS' ASSOCIATION.—A council meeting of this association was held at 34, Copthall-avenue, E.C., on April 23rd, Mr. D. B. Balding being in the chair. Dr. Major Greenwood, the honorary secretary, reported that in the matter of the Winchester guardians he had sent a letter to the Local Government Board saying that the council greatly regretted the sanction given to the action of the Winchester guardians in disregard of the provisions of Article 2 of the Medical Appointments Order of May, 1857, and inquiring whether it was lawful for a board of guardians to issue an advertisement for an officer on terms which contravened the Poor-law Orders. The Board had replied that Article VI. of the General Order provided that nothing contained in the Order "shall prevent the guardians in any case of emergency, or under special circumstances, from appointing one or more medical officers to act temporarily for such time and upon such terms as the Board shall approve," and that the Board would not regard the action of the guardians in the case in question as a contravention of the Order. Dr. Greenwood reported that the Public Health Committee of the British Medical Association had, after careful consideration of the question, decided to make strong representations to the Local Government Board upon the matter, and that the National Poor-law Officers' Association had also been approached. The

council considered the arrangements for the forthcoming Bristol meeting, and Tuesday, June 25th, the most convenient date for the municipal authorities, was agreed to.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—An ordinary meeting of this society will be held at the West London Hospital to-day, Friday, May 3rd, when Mr. J. H. Dauber will read a paper, "The Detrimental Effects of the Present System of Hospital Administration upon the Interests of the Medical Profession."

LITERARY INTELLIGENCE.—Mr. Murray announces the publication of "The Treatment of Tuberculosis by Means of Carl Spengler's Immune Substances (I.K.) Therapy," by Walter H. Fearis; "The House Fly, Disease Carrier," by Leland O. Howard, Ph.D., chief of the United States Bureau of Entomology; and "Further Researches into Induced Cell Reproduction and Cancer," by H. C. Ross and J. W. Cropper.—During the next few days there will be published a treatise in four volumes entitled "A System of Treatment." The editors, Dr. Arthur Latham, physician to St. George's Hospital, and Mr. T. Crisp English, senior assistant surgeon to St. George's Hospital, have received the assistance of 200 leading physicians and surgeons, who have written articles on subjects with which they are closely identified. The 500 illustrations are largely original, and there are over 5000 pages. A prospectus will be sent to any one interested by the publishers, Messrs. J. and A. Churchill, 7, Great Marlborough-street, London, W.

INSTITUTE OF HYGIENE.—An educational cinematograph was inaugurated at the institute by the President, Sir William Bennett, on the afternoon of Monday, April 29th. Sir William Bennett pointed out that the cinematograph may become a means of instruction of practically unlimited scope. Thanks, he said, to the ultra-microscope, all the details of germ life are easily demonstrated on the biograph, and many factors playing an active part in hygienic matters can be dealt with in the same way; while, descending to the realms of common affairs, much useful work can be done in illustrating matters connected with preventive medicine—the common dangers to health such as the fly pest, stagnant water, the features of domestic science as applied to the home, and so on. The council of the institute believes that by inaugurating such a permanent course of biographical instruction it is not only making a departure which is new, but one which, whilst it is capable of unlimited expansion, offers a powerful means of education.

THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY, LIMITED.—The annual general meeting of the members of the London and Counties Medical Protection Society was held at the offices of the society, 32, Craven-street, Strand, W.C., on April 24th. Dr. G. A. Heron presided. In moving the adoption of the report, the gist of which has already appeared in our columns, and balance sheet, the chairman said: "In the first place, I should like to do what has been customary at these gatherings for many years past, and that is to ask you to instruct me to request the general secretary to communicate to our President, Sir Jonathan Hutchinson, our very best wishes for his health and happiness in the future." The meeting having intimated unanimously its desire that such a message should be sent, the chairman discussed briefly the salient features of the society's work during the past year. The report and balance sheet were unanimously adopted, members of council and officers were elected for the coming year, and the meeting terminated with a vote of thanks to the chairman.

MEDICAL SICKNESS AND ACCIDENT SOCIETY.—The usual monthly meeting of the executive committee of the Medical Sickness, Annuity, and Life Assurance Society was held at 429, Strand, London, W.C., on April 19th. There were present: Dr. F. de Havilland Hall, in the chair; Mr. J. Brindley-James, Dr. F. C. Martley, Dr. Fredk. S. Palmer, Mr. H. P. Symonds, Mr. F. S. Edwards, Mr. E. Bartlett, Dr. F. J. Allan, Dr. Greenwood, and Dr. J. B. Ball. The accounts presented showed, as is usual in the early part of the year, a considerable number of sickness claims arising to a great extent from bronchial ailments, to which medical men in general practice seem exceptionally liable. The claims have been mostly short and have not caused much more than the usual amount of disbursement. The annual report to be presented to the members at the general meeting on May 9th shows that in 1911 the society made good progress both in membership and financial strength. Prospectuses and all further particulars may be obtained from the secretary, 33, Chancery-lane, London, W.C.

THE annual meeting of the East-End Mothers' Lying-in Home will be held at 25, Rutland-gate, London, S.W., on Tuesday, May 7th, at 3 30 P.M. The speakers will include Lord Goschen (who will preside), Mrs. F. B. Mildmay, Dr. W. S. A. Griffith, and the chairman of the home, Mr. Owen Lankester.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Select Committee on Patent Medicines.

THE Select Committee of the House of Commons on Patent Medicines has been constituted. Its duty will be "to consider and inquire into the question of the sale of Patent and Proprietary Medicines and medical preparations and appliances, and advertisements relating thereto; and to report what amendments, if any, in the law are necessary or desirable."

The members of the Committee are Mr. CHARLES BATHURST, Mr. CAWLEY, Dr. CHAPPLE, Sir HENRY DALZIEL, Mr. MARSHALL HALL, Mr. HAYDEN, Mr. HODGE, Mr. INGLEBY, Mr. GLYN-JONES, Mr. HAYDN JONES, Mr. LAWSON, Mr. LYNCH, Sir PHILIP MAGNUS, Mr. NEWTON, and Sir HENRY NORMAN. The Committee has the usual powers of a Select Committee to send for persons, papers, and records. It has been granted the additional power of ordering analyses. The sittings of the Committee will, it is expected, be prolonged.

Medical Contract Practice.

Sir HENRY CRAIK, as briefly recorded last week, made a speech on Wednesday, April 24th, in which he dealt at some length with the attitude of the medical profession to contract practice. The occasion was Mr. RUPERT GWYNNE'S amendment asking for the postponement of the Insurance Act. Sir HENRY CRAIK said that through the Insurance Act the Government was trying to force the working classes to be medically dealt with by what was called contract practice—a degrading practice, both to those who received it and to those who gave it. It had been said that medical men were to blame for the position which had grown up. He admitted that the medical profession had allowed it to grow up, but he did not admit that they were to blame for it. When there was no Insurance Act, and when the health of the people had to be attended to one way or another, the doctors did admit as a *pis aller* the possibility of contract practice, but they always pointed out its defects and evils. They declined to increase it, and they narrowed it down as far as they possibly could and they were determined that it should not go beyond a certain limit. They were ready to do it because it dealt with the very poorest and those who were sunk below the level of self-sustenance and independence. There was no other way of dealing with those than by contract practice as they could not be expected to pay the full fees. The medical profession acted generously in that matter, and he thought that it was unfair to cast up to them now that they were prepared to deal with the very poorest and most helpless class at a loss to themselves and with a burden which it was often very difficult for them to bear, but they had their recompense in the willing payment made by the well-to-do working classes. Sir HENRY CRAIK went on to say that if the Government had accepted the amendment limiting the operation of the medical benefits, so far as contract practice was concerned, merely to those who were earning below £2 a week, they would have provided a very satisfactory solution. He asked the Government to be reasonable and the medical profession would meet them. They ought not to ask them to take up this work blindly at a price which they had proved over and over again by the most clear and absolute statistics would not give them a living wage, and which would make a man pay 5000 visits in order to get a pittance of £200 or £260. If the great mass of the medical profession were brought down to that level, he doubted whether it could be maintained at the high level at which it stood to-day.

Mr. MASTERMAN'S brief reply was reported last week.

Midwives (Scotland) Bill.

The Bill introduced into the House of Commons by Mr. BARNES, "to secure the better training of midwives in Scotland and to regulate their practice," has been printed. The measure is backed by Mr. AINSWORTH, Mr. R. HARCOURT, Mr. ARTHUR HENDERSON, Mr. DUNCAN MILLAR, and Sir GEORGE YOUNGER. It is proposed that only certified women shall act as midwives in Scotland, that a Central Midwives Board of Scotland shall be formed with jurisdiction over certified midwives, and that there shall be local supervision, and notification of practice. The Bill, which extends to 33 clauses, provides appropriate machinery to carry out these objects.

Certification is dealt with in Clause 3, which runs as follows: "(1) From and after the *first day of January one thousand nine hundred and fourteen* any woman who, not being certified under this Act, shall take or use the name or title of midwife (either alone or in combination with any other word or words), or any name, title, addition, or description implying that she is certified under this Act, or is a person specially qualified to practise midwifery, or is recognised by law as a midwife, shall be liable on summary conviction to a fine not exceeding *five pounds*. (2) From and after the *first day of January one thousand nine hundred and nineteen* no woman shall attend women in childbirth otherwise than under the direction of a registered medical practitioner unless she be certified under this Act; any woman so acting without being certified under this Act shall be liable on summary conviction to a fine not exceeding *ten pounds*, provided this section shall not apply to registered medical practitioners or to anyone rendering assistance in a case of emergency. (3) No woman shall be certified under this Act until she has complied with the rules and regulations to be laid down in pursuance of this Act. (4) No woman certified under this Act shall employ an uncertified person as her substitute. (5) The certificate under this Act shall not confer upon any woman any right or title to be registered under the Medical Acts or to assume any name, title, or designation implying that she is by law recognised as a medical practitioner, or that she is authorised to grant any medical certificate, or any certificate of death or of still-birth, or to undertake the charge of cases of abnormality or disease in connexion with parturition."

Provision is made to safeguard existing midwives.

The following constitution is proposed by Clause 5 for the Central Midwives Board of Scotland: "(1) Three persons (two of whom shall be certified midwives practising in Scotland) to be appointed for a term of three years by the Lord President of the Council; (2) one person to be appointed for a term of three years by the Association of County Councils for Scotland, one person to be appointed for a term of three years by the Convention of the Royal Burghs of Scotland, one person to be appointed for a term of three years by the Queen Victoria Jubilee Institute for Nurses, and one person to be appointed for a term of three years by the Society of Medical Officers of Health; and (3) four registered medical practitioners to be appointed for a term of three years, one by the Universities of Edinburgh and St. Andrews, conjointly, one by the Universities of Glasgow and Aberdeen, conjointly, one by the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, conjointly, and one by the British Medical Association."

Clause 7 deals with the duties and powers of the Board. It is in the following terms:—"The duties and powers of the Board shall be as follows: (1) To frame rules—(*a*) regulating their own proceedings; (*b*) regulating the issue of certificates and the conditions of admission to the roll of midwives; (*c*) regulating the course of training and the conduct of examinations (which shall, so far as possible, be of a practical character) and the remuneration of the examiners; (*d*) regulating the admission to the roll of women already in practice as midwives at the *passing of this Act*; (*e*) regulating, supervising, and restricting within due limits the practice of midwives, and defining the emergencies in which a midwife shall call in a medical practitioner to her assistance; (*f*) deciding the conditions under which midwives may be suspended from practice; (*g*) defining the particulars required to be given in any notice under section thirteen of this Act; (2) to appoint examiners, one of whom shall be a registered female medical practitioner, and none of whom shall be a member of the Board; (3) to decide upon the places where, and the times when, examinations shall be held; (4) to publish annually a roll of midwives who have been duly certified under this Act; (5) to decide upon the removal from the roll of the name of any midwife for disobeying the rules and regulations from time to time laid down under this Act by the Board, or for other misconduct, and also to decide upon the restoration to the roll of the name of any midwife so removed; (6) to issue and cancel certificates; and generally to do any other act or duty which may be necessary for the due and proper carrying out of the provisions of this Act. Rules framed under this section shall be valid only if approved by the Privy Council; and the Privy Council, before approving any such rules, shall take into consideration any representations which the General Medical Council may make with respect thereto."

Local supervision of midwives is provided for by Clause 19. The main provision of this clause is that "the town council of every burgh, the district committee of every county district, and the county council of every county which is not divided into districts, in which this Act is operative, shall, on the commencement of this Act, be the local supervising authority over midwives within the area of the said burgh, or district, or county. It shall be the duty of the local supervising authority, by themselves, or by their medical officer acting under their instruction—(1) to exercise general supervision over all midwives practising within their area in accordance with the rules to be laid down under this Act; (2) to investigate charges of malpractice, negligence, or misconduct on the part of any midwife practising within their area, and should a *primâ facie* case be established to report the same to the Board; (3) to suspend any midwife from practice in accordance with the rules under this Act if such suspension appears necessary in order to prevent the spread of infection; (4) to report at once to the Board the name of any midwife practising in their area convicted of an offence; (5) to report at once to the Board the death of any midwife or any change in the name and address of any midwife in their area, so that the necessary alteration may be made in the roll; (6) to supply to the secretary of the Board, during the month of January of each year, the names and addresses of all midwives who during the preceding year have notified their intention to practise within their area and to keep a current copy of the roll of midwives, accessible at all reasonable times for public inspection; (7) to give due notice of the effect of the Act, so far as practicable, to persons at present using the title of midwife."

Every certified midwife under Clause 21 is bound, before holding herself out as a practising midwife or commencing to practise as a midwife in any area, to notify the local supervising authority, and this notification must be repeated annually.

Medical assistance in cases of emergency is provided for by clause 25. It runs: "(1) In case of an emergency as defined in the rules framed under section seven (1) (*e*) of this Act, a midwife shall call in to her assistance a registered medical practitioner, and the local supervising authority shall pay to such medical practitioner a sufficient fee according to a scale to be fixed by the Local Government Board for Scotland, and such fee shall cover one subsequent visit: Provided always that no fee will be payable by the local authority in respect of attendance upon any woman who is entitled to maternity benefit under the provisions of the National Insurance Act. (2) It shall be a condition of the payment of such fee that the medical practitioner so called in shall state in his claim to the local supervising authority the nature of the emergency and that he has been unable to obtain payment of his fee from the patient or her relatives. (3) The midwife shall report forthwith to the supervising local authority each case of emergency in which she has called in a medical practitioner to her assistance, stating the nature of the emergency and the name of the medical practitioner. (4) The supervising local authority shall have power to recover the fee from the husband or guardian of the patient as an alimentary debt unless it be shown to their satisfaction that such husband or guardian is unable by reason of poverty or ill-health to pay such fee."

The Bill, of course, only applies to Scotland.

The Departmental Committee on Tuberculosis.

In its interim report the Departmental Committee on Tuberculosis, of which Mr. ASTOR, M.P., is chairman, discusses various aspects of the problem of the treatment of this disease. The report is rendered all the more important because of the provisions of the National Insurance Act and the sanatorium benefit. The terms of reference to the committee were "to report at an early date upon the consideration in respect of the problem of tuberculosis in the United Kingdom in its preventive, curative, and other aspects, which should guide the Government and local bodies in making or aiding provision for the treatment of tuberculosis in sanatoria, in other institutions, or otherwise." The report is of a very elaborate nature, but the committee summarises its principal recommendations in the concluding paragraph. These summarised recommendations are:—

(1) That schemes dealing with the whole population should be drawn up by councils of counties and county boroughs, or by combinations of these bodies, at the earliest possible date on the lines recommended in this report, with due regard to the incidence of the disease and the special conditions and circumstances of the area.

(2) That the early establishment in working order of an adequate number of tuberculosis dispensaries is essential.

(3) That, so far as possible, grants in aid of tuberculosis dispensaries should only be given where such institutions will eventually form constituent parts of complete schemes.

(4) That, in framing complete schemes, regard should be had to all the existing available authorities, organisations, and institutions with a view to avoiding waste by overlapping and to obtaining their coöperation and inclusion within the schemes proposed.

(5) That special regard should be given to securing the coöperation of medical practitioners in the working of the schemes, particularly in relation to the early detection of the disease and its domiciliary and dispensary treatment.

(6) That special attention should be paid to securing suitably qualified and experienced medical practitioners for the senior appointments in connexion with institutions established, as the ultimate result obtained by the treatment recommended must depend to a great extent upon their medical and administrative qualifications.

(7) That, in erecting or adapting institutions local authorities and other bodies should avoid pretentious and extravagant buildings, and should aim rather at providing institutions of a simple and inexpensive character. It would seem desirable that provisions similar to those of Section 3 of the Education Act, 1911, should be made applicable, and that due regard should be had to any Town Planning schemes.

(8) That inasmuch as the opportunities which are now afforded in general hospitals to students of medicine for the observation of the course and treatment of tuberculosis are insufficient to secure provision of an adequate number of expert medical officers, advantage should be taken of the extended opportunities which will be afforded under the proposed scheme to obtain additional instruction.

Glasgow Boundaries Extension.

Amongst the witnesses who have given evidence in support of the Glasgow Boundaries Bill before a Select Committee of the House of Commons was Dr. A. K. CHALMERS, medical officer of health of

Glasgow. He emphasised the need for central control in public health matters over the large area comprised in Glasgow and the immediately adjoining populated districts. He thought that the necessity for this was particularly great in regard to infectious diseases. The Bill is still under the consideration of the committee.

Births and Deaths in Scotland.

The annual report of the Registrar-General on the births, deaths, and marriages in Scotland during the year 1911 has been published as a Parliamentary Blue-book. Births registered in Scotland during the year numbered 121,811. The birth-rate was 25·65 per 1000. It is 0·53 less than that of the previous year, and is the lowest annual birth-rate yet recorded, the previous lowest being that of 1910, which was 26·18. The total number of deaths registered in Scotland during the year 1911 was 71,726. The death-rate for the year was 15·10, the lowest on record. The vaccination statistics of the year 1910, which are dealt with in the report, provide further evidence of the serious effect which the Vaccination (Scotland) Amendment Act, 1907, is having on the administration of the Vaccination (Scotland) Act, 1863. Statutory statements of conscientious objection have been more numerous than in previous years, and the proportion of vaccinated children to children alive at the expiry of the period for compulsory vaccination has fallen to 67·6 per cent. The proportion previous to the passing of the Act of 1907 was constantly over 93 per cent.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 24TH.

The Tuberculosis Committee.

Mr. FELL asked the Secretary to the Treasury whether the Committee to be appointed under the tuberculosis sections of the National Insurance Act would include a veterinary surgeon, to enable the question of bovine tuberculosis in connexion with mankind to be especially considered.—Mr. MASTERMAN replied: I do not understand what committee the honourable Member has in mind. The Committee on Tuberculosis which was appointed some weeks ago has practically concluded its work, and I hope its report will be presented to the House in a few days' time.

Mr. FELL: May I ask whether the question of bovine tuberculosis will be covered by the report of the committee?—Mr. MASTERMAN: I am not quite sure what the terms of reference were, and perhaps the honourable Member will give notice of the question.

Mr. FELL: Why has the committee concluded so soon?—Mr. MASTERMAN: It is most important that the report should be rapidly placed before the house.

THURSDAY, APRIL 25TH.

Sanatorium Benefit.

Mr. WRIGHT asked the Secretary to the Treasury what was the estimated number of persons who would be entitled to sanatorium benefit on July 15th, 1912, what was the estimated cost of permanent and temporary buildings to be provided at that date for the accommodation of persons entitled to sanatorium benefit, and what were the number, names, and addresses of the private sanatoriums with which arrangements had been made to provide the benefits of sanatorium treatment in cases of tuberculosis on the date on which the Insurance Act came into operation, and what were the number of beds available in such private sanatoriums.—Mr. MASTERMAN answered: It will rest with the Local Insurance Committees—or pending their appointment with other authorities set up temporarily for the purpose—subject to certain conditions, to recommend tuberculous insured persons for sanatorium or other treatment and to make the necessary arrangements with sanatoriums and other institutions. I am unable to say at present how many persons will require sanatorium benefit in July next, and it is clearly impossible that such arrangements as those which the honourable Member suggests should have been concluded as yet with private sanatoriums. With regard, however, both to these questions and also to that of the cost of building sanatoriums, I would beg to refer the honourable Member to the first report of the Tuberculosis Committee, which will, I hope, be published in a few days.

Mr. WRIGHT: Has the honourable gentleman no further information to give to the House if anything has been done with regard to providing sanatorium benefit for those who are entitled to it under the Act?—Mr. MASTERMAN: Arrangements are being considered and some of them are being put forward. I think there is no answer I can usefully give until the report of the committee is before the honourable gentleman.

Feeble-minded Persons in Workhouses.

Mr. ASTOR asked the President of the Local Government Board whether he had any reason to suppose that there had been any substantial variation in the number of feeble-minded persons other than certified lunatics in workhouses or other Poor-law institutions since the date of the last return on Jan. 1st, 1906; and, if so, in what direction such variation had taken place.—Mr. BURNS said in reply: I have no reason to suppose that there has been any substantial variation in the number of those persons since the date mentioned.

Writer's Cramp and Workmen's Compensation.

Mr. WEDGWOOD asked the Secretary of State for the Home Department whether he could see his way to extend the terms of reference of the committee inquiring into industrial diseases that could be added to the Third Schedule of the Workmen's Compensation Act so that they might consider the addition of writer's cramp among the diseases for which compensation was payable.—Mr. ELLIS GRIFFITH wrote on behalf of Mr. MCKENNA: My right honourable friend would be prepared to consider the question of including writer's cramp in the reference to the committee which has just been appointed; but up to the present no representations have been made to the Home Office on the subject, nor does it appear to have been brought before the former committee which made the general inquiry in regard to industrial diseases after the passing of the Compensation Act of 1906.

MONDAY, APRIL 29TH.

Works Medical Attendance and the Insurance Act.

Mr. HODGE asked the Secretary to the Treasury where workmen, insured under the provisions of the National Insurance Act, had made efficient provision through the medium of their works doctor for medical attendance and medicine for themselves and family, would such member be refunded by the Insurance Commissioners or the Local Health Committees, as the case might be, the amount provided for such insured person or persons for such service, or what provision would be made to insure that insured persons would not be called upon to pay for a service which they had already made efficient provision for.—Mr. MASTERMAN replied: Organisations of the kind referred to in question which were in existence at the time of the passing of the Act, and which provide an efficient medical service, can be approved under the special provisions of Subsection (4) of Section 15 of the Act, or, alternatively, cases of the kind can be dealt with under Subsection (3) in such a way as to prevent insured persons being required to pay twice for their medical attendance.

The Teeth of Special Reserve Officers.

Dr. CHAPPLE asked the Under Secretary of State for War whether candidates for commissions in the Special Reserves were being rejected upon medical examination because, though in every other way entirely fit, they had more than 10 natural teeth replaced by a corresponding number of artificial ones; and, if so, would he take steps to modify a regulation that had some justification before the days of modern dentistry, but had none now.—Colonel SEELY replied: The standard for teeth for the Special Reserve is the same as that laid down for the Regulars. The number of lost teeth that disqualifies was fixed after careful consideration, having in view the fact that a certain number of lost teeth renders an officer inefficient on active service, and that when these are replaced by artificial teeth there are no means when on active service of replacing them when broken or lost.

TUESDAY, APRIL 30TH.

Workmen's Compensation and Fibroid Phthisis.

Mr. NEWMAN asked the Secretary of State for the Home Department whether his attention had been drawn to the fact that a man was recently certified to have met his death from inhaling dust while employed as a grinder at the Royal Small Arms Factory, Enfield, and whether he could see his way to have the well-recognised disease resulting from the inhalation of dust or grit scheduled as a disease under the terms of the Workmen's Compensation Act.—Mr. MCKENNA replied: Yes, the attention of the department has been called to this case. The question of scheduling under the Workmen's Compensation Act the disease known as fibroid phthisis was very fully considered by the committee which inquired into the subject of the application of the Act to industrial diseases in 1907, and it recommended, on the grounds stated at length in its report, that this disease should not be scheduled. The position in this respect has not altered since the committee reported, and I do not know that anything would be gained by reopening the question now. I may point out that disablement caused by the disease will now be covered by the provisions of the Insurance Act.

Experiments on Living Animals.

Mr. CHANCELLOR asked the Secretary of State for the Home Department whether he had received from a number of mental hospitals and asylums application for a grant of money to be expended on research; and whether, before any such grant was made, he would give the House an opportunity of expressing an opinion on the use of public money for experiments on living animals to discover methods of mental treatment.—Mr. MCKENNA furnished the following reply: The answer to the first part of the question is in the negative, and therefore the second part of the question does not arise. I may add that I have no funds at my disposal from which any such grant could be made.

Lead Poisoning in Potteries.

Mr. NOEL BUXTON asked the Secretary of State for the Home Department to state what were the latest available statistics with regard to cases of lead poisoning in potteries; how long the rules recommended by the recent Departmental Committee on Lead Poisoning and Injury by Dust had been in force; and whether he could give any information as to the results obtained by the new rules.—Mr. MCKENNA (by written answer) replied: The number of cases of lead poisoning in potteries last year was 92; in 1910, 77; during the first three months of the present year 24. The new regulations based on the report of the committee have not yet come into force. In accordance with the procedure laid down by the Factory Act they had first to be published in draft, and on the publication of the draft a large number of objections on details were received from those engaged in the industry, both employers and operatives. It appears to me that the most satisfactory and probably the speediest method of settling the matter was to ask the chairman of the committee, who was thoroughly familiar with the whole question, to confer with the objectors, with a view to arriving at an agreement on the points raised. The chairman undertook to do this, but, partly through ill-health, he has been prevented up to the present from taking up the question. I understand that he now hopes to do so very shortly. Unless the objections can be settled by agreement it will be necessary to hold a formal inquiry in accordance with Section 80 of the Factory Act.

The Disposal of London Refuse.

Sir JOHN ROLLESTON asked the President of the Local Government Board whether he was aware that quantities of refuse were brought from the borough of Islington to wharves on the banks of the River Lea and were taken in barges into Hertfordshire to wharves in the parishes of Hoddesdon and St. Margaret's, and are thence distributed; whether he was aware that men engaged in this traffic have contracted illnesses from contact with this refuse; whether, seeing that this practice was dangerous to the health of the inhabitants of the district, he would take steps to put a stop to it and compel the borough of Islington to deal with this refuse in destructors or otherwise; whether he was aware that similar refuse was imported in trucks of the Great Eastern Railway to the same district; and whether he would take steps to put a stop to this traffic, which was detrimental to the health of the district.—Mr. BURNS wrote in reply: I have had under consideration a passage in the annual report for 1911 of the medical officer of health for the Ware rural district relating to the disposal in the district of London refuse. The subject is receiving my attention.

WEDNESDAY, MAY 1st.

The Medical Profession and the Insurance Act.

MR. GRANT called attention to the administration of the medical benefits under the National Insurance Act; and moved "That this House is of opinion that immediate steps should be taken by the Government to ensure the coöperation of the medical profession in the administration of the National Insurance Act, and that, until such coöperation is ensured, the Act will fail efficiently to provide medical benefit." The honourable Member said that the main object he had in view was to elicit from the Government information as to their relations with the medical profession in connexion with the administration of the Insurance Act. He believed that the fault for the deadlock did not lie with the medical profession. The fact that Parliament had to face was that the Government was not in a position to give the medical benefits which had been promised. If the Chancellor of the Exchequer wanted the brains and experience of the medical profession he must fairly and frankly meet its minimum demands. It was the duty of the Government in any future negotiations with the medical profession to treat them not with abuse but with courtesy and understanding. If they did that, there seemed to him a chance that the Act would not be a failure, and would carry out the hopes which had been entertained for it. He understood that it was anticipated that medical men would be paid 4*s.* 6*d.* per insured person per annum. Such a payment would not attract the best men, and would also act as a deterrent to clever young men entering the medical profession. £225 a year would not be an adequate sum to pay a doctor to look after the health of a thousand persons. The medical profession flatly declined to work the Act on these conditions, and without them it was unworkable. The profession said that the Act could not be worked at less than 10*s.* per head, including medicine.

MR. PEEL seconded the motion.

DR. C. ADDISON did not see what purpose the discussion served at the present time. The questions which the House were discussing were reserved for consideration of an Advisory Committee. That committee was to meet next week. Surely in these circumstances it was premature to ask the Chancellor of the Exchequer to announce beforehand what the Government proposed to do. The resolution did not touch any of the cardinal points demanded by the medical profession. Medical benefits could not, under any circumstances, come into operation until next January. He hoped that the Chancellor of the Exchequer would say that he was not going to prejudice the advice which the committee would give. He was sure that the medical profession would not desire the decisions of the committee to be prejudiced. The British Medical Association had appointed 12 members to serve on this Advisory Committee. Did honorable gentlemen opposite think it was going to help these 12 members if the Chancellor of the Exchequer took the decision out of their hands? He went on to deal with the various points in connexion with the Act in relation to the medical profession. A statutory limitation of £2 per week of an income was not workable in regard to the Insurance Act. What medical men wanted was proper pay under honourable conditions. It was the patient that was the doctor's concern, and certainly he did not want to act as a private detective into the patient's income. He hoped that the Government would—and he believed that they would—meet the legitimate demands of the medical profession and give them honourable conditions for the work that they did. He emphasised the fact that the Insurance Act took the medical benefits away from the control of the Friendly Societies and gave them to the control of the Insurance Committees. It gave free choice of doctors, and he believed that the result would be to abolish club practice from one end of the country to the other.

SIR ROBERT FINLAY remarked that the honourable Member (Dr. Addison) had said that he was the friend of the medical profession. The honourable gentleman was also the political friend of the Chancellor of the Exchequer.

MR. LLOYD GEORGE: Why not the friend of both?

SIR ROBERT FINLAY: The Chancellor evidently thinks that both could be predominant. The right honourable gentleman went on to condemn the contract system as bad both for medical men and patients. The tangle into which things had got was due to the way in which the Bill was rushed through Parliament. The medical profession were thoroughly united in their attitude of hostility towards the terms that were being offered to them.

The Chancellor of the Exchequer and the Medical Profession.

MR. LLOYD GEORGE, replying to the debate, said that the Insurance Commissioners had to-day received a letter from the Council of the British Medical Association asking them to meet them, and the Commissioners replied that they would. The right honourable gentleman went on to say that 75 per cent. of the demands of the medical profession had been embodied in the Insurance Act. It was impossible to adopt a uniform income limit applicable to the whole country, but the machinery had been set up to fix the minimum in each district. There was not a single demand in regard to the character of the machinery which was asked for to which the Government did not agree. Surely all that should be recognised. The income limit was a matter to be discussed in the localities themselves, where regard could be had to the wages of the district and to the conditions under which medical practice had been carried on in the past. There had been a good deal of discontent with contract practice on the part of medical men. It was justified in many cases. There was nothing in the Insurance Act which enforced contract practice. It did not prescribe contract practice anywhere. It simply said that there could be provision for medical attendance. He had no desire to extend contract practice. He did not introduce this Act with the desire to extend contract practice. There were four courses under the Act in relation to medical benefit. The first course was that where there was contract practice at the present moment and the medical profession were prepared to go on with it, they should put it on a fair and equitable basis. The negotiations which would take place ought to ensure that the medical profession got a fair return for their services in those districts. The second course, which applied to places where the medical profession would not agree to contract practice or where contract practice was unsuitable, was the method of pooling all the money available for medical benefits in a particular district. All that money should be divided amongst the medical profession in proportion to the bills sent in. If there was a deficiency it was made up by the patients themselves. The third course was that the sum of money which was set aside for medical benefit should be returned to the individuals. The last course would be to pay the contribution to the Friendly Society itself and let the society make its own arrangements. These were the four courses which were open to the Commissioners and the medical profession. The right honourable gentleman went on to say that he hoped that the House would not at this stage interpose any obstacles to a practical settlement which would be satisfactory to all parties. It was the sincere desire of the Government to meet the legitimate wishes of the medical profession. The Government were, in fact, in negotiation with them. They had set up the Advisory Committee, on which there were 33 members of the medical profession out of a total of 161. The committee, he hoped, would appoint subcommittees to deal with this matter, and on them the medical representation would be considerable. The House must await the report of the committee before they pronounced any judgment on the best method. He did not think that that was an unreasonable demand to make. He would appeal to individual Members of the House of Commons during the course of the next few weeks to coöperate in bringing these negotiations to a successful conclusion rather than to put difficulties in the way. He was certain that there would be a patriotic response to that appeal. This was a matter of great consequence not only to this great profession, but to the 15 millions of insured persons. He thought that everyone would agree that to demand £3,000,000 in addition to what was already provided was a demand which the friends of the medical profession themselves would admit was excessive, but he was not complaining that they should put forward their highest demand. The Government would enter into these negotiations without any prejudice at all. They should enter into them with a view to see that the medical profession was adequately remunerated for the very great, onerous, and responsible work which it was discharging. He trusted that on both sides they would get the negotiating temper. He did not say that it would be possible to get an arrangement with the medical profession without asking the House of Commons to make some additional provision. This was a matter which would be made clearer when they embarked upon the negotiations. He pointed out that there were very considerable benefits in the Act besides the medical benefit. It was far better that the arrangements for medical benefit should be made through the machinery provided in the Act than by the Friendly Societies themselves, because the Act provided elaborate precautions for the purpose of protecting medical men against any unfair bargains being forced upon them by competition amongst themselves. He saw no reason why the Government should not assent to the motion.

The motion was agreed to unanimously.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ADAMSON, OSWALD, J. W., L.R.C.P., M.R.C.S., has been appointed Senior House Physician at the Prince of Wales's General Hospital, Tottenham.

ASHTON, GEORGE, M.D. Vict., has been re appointed Medical Officer for Home Patients at the Manchester Royal Infirmary.

DONNAN, W. D., M.D. R.U.I., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Holywood District of the county of Down.

DUFFIELD, FRANCIS A., M.B., Ch.B. Edin., has been appointed Demonstrator in Experimental Physiology and Pharmacology in the University of Sheffield.

ECCLES, W. MCADAM, M.S. Lond., F.R.C.S. Eng., has been appointed Surgeon to St. Bartholomew's Hospital.

EDE, C., M.B., B.C. Cantab., has been appointed House Surgeon at the Dreadnought Hospital, Greenwich.

GARLAND, ALBERT I., M.R.C.S., L.R.C.P. Edin., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

GIBSON, A., M.B., Ch.B. Edin., has been appointed House Surgeon at the Dreadnought Hospital, Greenwich.

GREEN, JOSEPH, M.B., M.S. Glasg., has been appointed County School Medical Officer for Lancashire.

HAYES, G. CONSTABLE, F.R.C.S. Eng., has been appointed Lecturer in Otology at the University of Leeds.

JEFFERSON, J. C., M.R.C.S., L.R.C.P. Lond., has been appointed Junior House Surgeon at the Manchester Royal Infirmary.

LAWSON, R. S., M.B., Ch.B. Edin., has been appointed House Physician at the Dreadnought Hospital, Greenwich.

MACCORMAC, HENRY, M.B. Edin., M.R.C.P. Lond., has been appointed Assistant Physician for Diseases of the Skin at the Dreadnought Hospital, Greenwich.

MCEWAN, W. C., M.D. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Tranent District of the county of Haddington.

MARTYN, V. C., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

PAUL, C. B., M.B., B.S. Edin., has been appointed Assistant Surgeon to the Cumberland Infirmary.

PERDRAU, JEAN RENÉ, M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Senior Assistant Medical Officer and Pathologist at the County Asylum, Herrison, Dorchester.

PHILLIPS, B., M.B., Ch.B., has been appointed House Physician at the Dreadnought Hospital, Greenwich.

RUSSELL, D. H., M.B., Ch.B. Edin., has been appointed Second Assistant Medical Officer at the County Asylum, Herrison, Dorchester.

TRAVIS, G. L., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Llandudno District of the county of Carnarvon.

WILLIAMS, J. R., M.D. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Conway District of the county of Carnarvon.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

AYLESBURY, BUCKS COUNTY LUNATIC ASYLUM, Stone.—Assistant Medical Officer, unmarried. Salary £185 per annum, with board and apartments.

BEDFORD COUNTY HOSPITAL.—Assistant House Surgeon. Salary £80 per annum, with board, lodging, and laundry.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Resident Medical Officer for six months. Salary at rate of £60 per annum, with board, residence, &c.

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL, Woodchurch-road, Birkenhead.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Third House Surgeon. Salary £75 per annum, with board, rooms, and laundry.

BRIGHTON, ROYAL SUSSEX COUNTY HOSPITAL.—House Physician, unmarried. Salary £100 per annum, with apartments, board, and laundry.

BRISTOL GENERAL HOSPITAL.—House Physician for six months. Salary £80 per annum, with board, residence, &c.

BURTON-ON-TRENT INFIRMARY.—House Surgeon. Salary £120 per annum, with rooms, board, coal, and light.

CANTERBURY, KENT AND CANTERBURY HOSPITAL.—Resident Medical Officer, unmarried. Salary £90 per annum, with board, lodging, and washing.

CARDIFF, KING EDWARD VII.'S HOSPITAL.—Two House Surgeons for six months. Salary £30, with board, residence, and laundry.

CARMARTHEN, JOINT COUNTIES ASYLUM.—Second Assistant Medical Officer. Salary £160 per annum, with board, lodging, washing, &c.

CHELSEA INFIRMARY, Cale-street, S.W.—Second Assistant Medical Officer. Salary £100 per annum, with board, washing, apartments, &c.

CHELTENHAM GENERAL HOSPITAL.—House Physician, unmarried. Salary £100 per annum, with board, lodging, and washing.

CHESTER GENERAL INFIRMARY.—House Physician. Salary £90 per annum, with residence and maintenance.

DENBIGH, DENBIGHSHIRE INFIRMARY.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

DREADNOUGHT HOSPITAL, Greenwich.—Medical Registrar. Salary £50 per annum, with luncheon.

DUNDEE DISTRICT ASYLUM.—Senior Resident Medical Officer and Junior Resident Medical Officer. Salary £150 and £120 per annum respectively, with board and apartments.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—House Surgeon. Salary at rate of £75 per annum, with board, residence, laundry, &c.

FALKLAND ISLANDS.—Dental Surgeon. Salary £300 per annum.

HARTSHILL, STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY.—House Surgeon. Salary £100 per annum, with apartments, board, and washing.

HITCHIN, THREE COUNTIES ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, washing, and attendance.

HITHER GREEN, S.E., PARK HOSPITAL FOR CHILDREN.—Locum Tenens Assistant Medical Officer. Salary at rate of £150 per annum, with board, lodging, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton —House Physician (two vacancies).

HUDDERSFIELD ROYAL INFIRMARY.—Senior Assistant and Junior Assistant House Surgeons. Salaries £80 and £60 per annum respectively, with board, residence, and washing.

ITALIAN HOSPITAL, Queen-square, W.C.—Officer in Charge of X Ray Department.

KENSINGTON AND FULHAM GENERAL HOSPITAL, Earl's Court, S.W.—Resident Medical Officer for six months. Salary at rate of £75 per annum, with board, washing, and residence.

LEAMINGTON SPA, WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL.—Junior Resident Medical Officer. Salary £35 per annum, with board, residence, and laundry.

LEEDS GENERAL INFIRMARY.—Resident Obstetric Officer and House Physician for six months. Board, residence, and washing provided. Also Resident Medical Officer at the Ida and Robert Arthington Hospitals for six months. Salary £30, with board, residence, and washing.

LEEDS UNION INSTITUTIONS, Beckett-street.—Assistant Medical Officer, unmarried. Salary £130 per annum, with board, washing, apartments, and attendance.

LEEDS UNIVERSITY.—Surgical Tutor. Salary £125 per annum. Also Surgical Registrar for Leeds General Infirmary, which may be held with Tutorship. Salary £25 per annum.

LEICESTER INFIRMARY.—Assistant House Physician for six months. Salary at rate of £80 per annum, with board, apartments, and washing.

MACCLESFIELD GENERAL INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board and residence.

MAIDSTONE, KENT COUNTY OPHTHALMIC HOSPITAL.—House Surgeon. Salary at rate of £100 per annum, with board and residence.

MARGATE, ROYAL SEA BATHING HOSPITAL FOR SURGICAL TUBERCULOSIS.—Resident Surgeon. Salary at rate of £100 per annum for first six months, and £120 per annum for the last six months, with board, residence, and laundry.

METROPOLITAN EAR, NOSE, AND THROAT HOSPITAL, 2, Fitzroy-square, W.—Anæsthetists.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Assistant House Physician and Assistant House Surgeon. Salary at rate of £40 per annum, with board and washing.

MONTREAL, McGILL UNIVERSITY.—Lectureship in Physiology. Salary $2000 per annum.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead.—House Physician. Salary £75 per annum, with board, residence, and washing.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Soho-square, W.—Honorary Assistant Physician.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—House Surgeon. Salary £60 per annum, with board, residence, and laundry.

NORTHAMPTON GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £90 per annum, with apartments, board, washing, and attendance.

NOTTINGHAM GENERAL HOSPITAL.—Locum Tenens. Salary at rate of £3 3s. per week, with board, lodging, and washing.

PECKHAM HOUSE, PECKHAM, S.E.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board and residence.

PLYMOUTH WORKHOUSE.—Resident Medical Officer and Medical Officer for the Scattered Homes. Salary £150 per annum, with apartments, rations, and washing.

PRESCOT UNION WORKHOUSE AND INFIRMARY, Whiston, Prescot, near Liverpool.—Resident Assistant Medical Officer, unmarried. Salary £120 per annum, with board, washing, attendance, &c.

QUEEN ADELAIDE'S DISPENSARY, Pollard-row, Bethnal Green, E.—Resident Medical Officer, unmarried. Salary £100 per annum, with apartments, coal, gas, and attendance.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green.—Casualty House Surgeon for six months. Salary at rate of £80 per annum, with board, residence, and washing.

READING, ROYAL BERKSHIRE HOSPITAL.—House Physician. Salary £80 per annum, with apartments, board, and washing.

ST. MARY'S HOSPITAL, London, W.—Obstetric Surgeon.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

SHEFFIELD ROYAL HOSPITAL.—Sixth Resident, unmarried. Salary £60 per annum, with board, lodging, and washing.

SHEFFIELD ROYAL INFIRMARY.—Ear and Throat House Surgeon. Salary £70 per annum.

SLEAFORD, LINCOLNSHIRE, KESTEVEN COUNTY ASYLUM.—Assistant Medical Officer. Salary £175 per annum, with apartments, board, &c.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—House Physician. Salary £82 per annum, with board, residence, and laundry. Also House Surgeon. Salary £100 per annum, with board, residence, and laundry.

STEPNEY DISPENSARIES FOR THE PREVENTION OF CONSUMPTION.—Medical Officer for the Whitechapel Dispensary. Salary £250 per annum. Also Medical Officer for the St. George-in-the-East Dispensary. Salary £250 per annum.

SUNDERLAND ROYAL INFIRMARY.—Junior House Surgeon for six months. Salary £80 per annum, with board, residence, and laundry.

WADSLEY, SOUTH YORKSHIRE ASYLUM.—Locum Tenens Assistant Medical Officer for five months. Salary £3 3s. per week, with apartments, board, and attendance.

WALSALL AND DISTRICT HOSPITAL.—House Physician and Casualty Officer. Salary £90 per annum, with board, residence, and laundry.

WARRINGTON INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary at rate of £120 per annum, with apartments, board, and laundry.

WEST AFRICA.—Dental Surgeon. Salary £500 per annum, with quarters.

WESTMORLAND CONSUMPTION SANATORIUM AND HOME.—Medical Superintendent. Salary £350, with furnished house.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—House Physician. Also House Surgeon. Salary in each case £80 per annum.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon for six months. Salary £80 per annum, with board, rooms, and laundry.

YORK COUNTY HOSPITAL.—House Physician for six months. Salary at rate of £100 per annum, with board, residence, &c.

YORK DISPENSARY.—Resident Medical Officer (female). Salary £140 per annum, with board, lodging, and attendance.

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for Tavistock and Okehampton County Courts.

Births, Marriages, and Deaths.

BIRTHS.

BAWTREE.—On April 22nd, at Wood End, Pyrford, Surrey, the wife of Frank Bawtree, M.R.C.S., L.R.C.P., of a son.

BILLINGS.—On April 27th, at Dover-road, Folkestone, the wife of B. Richardson Billings, M.R.C.S. Eng., L.R.C.P. Lond., of a son.

MARRIAGES.

COLLINGRIDGE—SHADBOLT.—On April 25th, at St. Marylebone Parish Church, William Rex Collingridge, M.R.C.S., L.R.C.P., of Goudhurst, Kent, to Elsie Marian Shadbolt, late of Ipswich.

MORTON PALMER—MALCOLM.—On April 27th, at St. Botolph's, Heene, Albert Sydney Morton Palmer, M.D., B.C. Camb., to Alice Daisy, daughter of the late William A. Malcolm, of The Grange, Cults, Aberdeenshire.

PAGE—LIGHTING.—On April 24th, at St. James's Church, Nottingham, Algernon Fountain Page, M.R.C.S., L.R.C.P., to May, youngest daughter of the late Charles Lighting and Mrs. Lighting, of Hope Drive, The Park, Nottingham.

DEATHS.

COULTER.—On April 22nd, at High Wick, St. Albans, W. Coulter, M.D., late of Calcutta, aged 64 years.

DUKE.—On April 21st, at Molyneux Park, Tunbridge Wells, Colonel Alexander William Duke, late R.A.M.C.

NELSON.—On April 11th, on board the s.s. *Sarpedon*, Suez, H. Stanley Nelson, M.R.C.S., L.R.C.P. Edin., 157, Falkner-street, Liverpool, elder son of Dr. S. C. Nelson, Douglas, Isle of Man. Foreign papers please copy.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

CARELESSLY KILLING.

ALTHOUGH there is a still a good deal of quackery in Germany it is a more dangerous trade there than with us, for not only are the laws stricter but the courts are less apt to sympathise with a charlatan who has through ignorance contributed to a patient's death. The Appeal Court has just refused to interfere with a sentence of three years' imprisonment which was passed by the Verden Assize Court on a tradesman who by undertaking the treatment of a female patient suffering from cancer prevented her from applying for skilled surgical assistance in time for operative measures to have a chance of success. He was charged with "carelessly killing," his treatment consisting of a herbal mixture and a salve, the recipe for which he had learned from his mother who had been a peasant. In addition, however, he had used incantations or charms to "drive away" the disease. Had this occurred in England the quack would probably have suffered no further inconvenience than the censure of a coroner's jury, if indeed any public notice whatever had been taken of the occurrence.

REDNESS OF THE NOSE.

A CORRESPONDENT writes: "The case mentioned by 'A. C.' appears to be of a somewhat unusual nature. It presents many of the features of acne rosacea, but the chilblain circulation of the hands and feet seems to point to a more general disturbance of the circulation. Another diagnosis which suggests itself is that of lupus erythematosus, although the intermittent character of the erythema is against this. If these two affections are excluded, one may perhaps regard it as the result of some toxæmic condition acting on the vessel walls. The following treatment might be tried: Quinine, gr. v., t.d.s., and locally, R. Calaminæ, 3i.; zinci oxidi, 3i.; ichthyol, 3i.; liq. plumbi subacetatis, 3ss.; glycerini, 3ss.; aq. calcis ad 3i. To be painted on to the affected part at bed-time. Some cases in many respects similar to that described by 'A. C.' were recorded by the late Dr. J. F. Payne in an article 'On Persistent Erythema and its Treatment' in the *British Journal of Dermatology*, May, 1894, p. 129, *et seq.*"

W. E. writes as follows: "The localisation of the trouble to the nose points to a digestive cause of the affection. 'A. C.' says that his patient has no digestive trouble, but that is not a proof that digestion is perfect. The first step to take should be to have the teeth examined and to have them stopped or removed or scaled as seems necessary. Pyorrhœa alveolaris may be present, and, if so, it should be treated. If the teeth are perfect the diet should be considered, and especially the need for not drinking any liquid during meals. The best time for drinking water is about an hour before meals. The possibility of some lesion in the nasal cavity must be considered. Any constriction of the neck should be avoided."

DR. BARNARDO'S HOMES.

THE members of Dr. Barnardo's Homes National Incorporated Association held their annual general business meeting on April 30th, Mr. William Baker, the chairman of the council, presiding in the absence of the President, the Duke of Somerset. The Duke of Somerset was re-elected President, Mr. Howard Williams was re-elected treasurer, and the vice-presidents, the council, and auditors were appointed for the ensuing year. The forty-sixth annual report was presented, which showed that to Dec. 31st last 75,462 children had passed through the rescue doors, 2211 being admitted in 1911. Two-thirds came from the provinces and one-third from the metropolis. 9049 boys and girls of all ages were under the care of the association at the close of the year. Included in this number were 300 boys in training for the Navy and Mercantile Marine at the Watts Naval Training School in Norfolk, and on the training ship, the *George L. Munro*, stationed at Yarmouth. 1008 young emigrants were sent out during the year (1002 to Canada and six to Australia), making a total of 23,622 emigrated. 98 per cent. were successful. The death-rate covering all of the homes was remarkably low—only 6·92 per 1000, and this notwithstanding that of this great family 1043 were babies under five years of age and 973 belonged to the sick, ailing, blind, deaf and dumb, and incurable class. The audited accounts and balance sheet were adopted, showing the total income for the year to be £246,435. Of this amount £58,574 came from legacies, a drop of £33,000 as compared with the year 1909, when legacies totalled more than one-third of the whole income of the association. Two principal extensions were in progress—the Boys' Garden City, which is to be formally opened by H.R.H. the Duchess of Albany on May 23rd, and which when complete will accommodate 900 boys; and the new Australasian Hospital at the Girls' Village Home (a community of 1300 girls), to be opened by Earl Brassey on June 6th.

SUSSEX AND ITS TRAMPS.

THE third annual report on the working of the way-ticket system in Sussex shows that the scheme has been very successful in reducing the number of tramps. Compared with 1910 the figures for 1911 show decreases in eight unions, varying from 5 per cent. to 38 per cent., and in only one union is there an increase which is easily accounted for, geographical reasons being the principal factor. It is satisfactory to note that the system is spreading, the unions of Reigate and Godstone in Surrey having fallen into line. The guardians of those unions probably find they are compelled to do something rather than have a continuous flow of tramps who dislike the regulations in force in Sussex. But the scheme must be universally adopted if the scheme is to work, and it is worthy of success because it differentiates between the genuine working-man seeking employment and the loafer.

MISTAKEN KINDNESS.

A CASE has recently come before the German High Court when the question to be decided was whether a practitioner who treated a patient unskilfully, thereby causing injury, is to be considered guilty of causing corporal damage, when his attentions are voluntary. A young man met with an accident in which the flexor tendons of the right index finger were severed. The surgeon who attended him ("out of kindness") stitched up the wound without attempting to unite the ends of the tendons, and a useless finger was the result. The court found that the surgeon, even though he was not expecting any remuneration, was guilty, as he undertook the case; if he had not been able or willing to deal satisfactorily with it he should have passed it on.

A TEMPORARY HOME FOR GIRL CHILDREN.

THE S. John Baptist Hospice, 10, Lancaster-place, South Hampstead, N.W., affords shelter to children from London parishes during times of emergency or temporary distress in their own homes. It takes care of them, for example, when the mother is in hospital or at a convalescent home. Girls only are admitted between the ages of 3 and 12 years, and they may remain from two to six weeks or even longer. Until the present debt is cleared off a charge of 5s. a week is made for most children, but there is still one free bed. The hospice is unendowed and supported entirely by voluntary contributions. Applications for admission and inquiries should be addressed to the lady in charge.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

WE shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced up to the end of August:—

April 28th–May 4th (Some Metropolitan Boroughs and Provincial Towns).—National Health Week.
May 7th–17th (Washington).—Ninth International Red Cross Conference.
,, 9th–11th (London, University of London).—Annual Conference of the Child-Study Society.
,, 13th (London, Guildhall).—Conference on Diet in Schools.
,, 21st (London).—Royal Society of Medicine. Opening of New Buildings by His Majesty the King.
,, 22nd–30th (London, Chelsea).—Royal International Horticultural Exhibition.
,, 23rd (opens) (Philadelphia).—Twelfth International Congress on Navigation.
,, 23rd–25th (Hanover).—Nineteenth Meeting of the Union of German Laryngologists.
,, 23rd–June 8th (London, Olympia).—Royal Naval and Military Tournament.
,, 25th–27th (Paris).—International Musical Festival.
,, 26th–28th (Paris).—National Conference of the "Gouttes de Lait."
Whitsuntide (Portrush).—British Esperanto Congress.
May 27th–**June** 1st (London).—Eighteenth International Congress of Americanists.
,, 29th–31st (Berlin).—Fifteenth Session of the German Society for Gynæcology.
May to October (London, Earl's Court).—Shakespeare's England.
June 3rd and 4th (Atlantic City, N.J.).—Fourteenth Annual Meeting of the American Proctologic Society.
,, 11th–14th (Caxton Hall, Westminster).—Second National Conference on the Prevention of Destitution.
,, 17th–29th (London, Olympia).—International Horse Show.
,, 24th–27th (London).—The (Biennial) Health Conference and Exhibition.
,, (London).—Missionary Exhibition.
,, (Atlantic City, N.J.).—Annual Meeting of the American Medical Association.
,, (Birmingham).—Tuberculosis Exhibition.
,, (London, Science Museum, South Kensington).—Second Optical Convention.

July 2nd–5th (London).—Congress of the Universities of the Empire.
„ 2nd–6th (Doncaster).—Seventy-third Annual Show of the Royal Agricultural Society of England.
„ 4th–6th (Dublin).—Celebration of the Bicentenary of the School of Physic in Ireland (Medical School of Trinity College, Dublin).
„ 12th–16th (London).—Imperial Conference of Teachers' Associations.
„ 17th–19th (Oxford).—Oxford Ophthalmological Congress.
„ 19th–27th (Liverpool).—British Medical Association, Eightieth Annual Meeting.
„ 24th–30th (University of London).—First International Eugenics Congress.
„ 25th–28th (Berlin).—Royal Institute of Public Health.
„ 26th–31st (Prague).—Sixth International Congress of Radiology and Medical Electrology.
„ 29th–August 3rd (York).—Congress and Exhibition of the Royal Sanitary Institute.
Aug. 5th–10th (Oxford).—Second International Congress of Entomology.
„ 6th–10th (Düsseldorf).—Third International Medical Congress on Industrial Accidents.
„ 7th–10th (Glasgow University).—Thirty-second Annual Meeting of the British Dental Association.
„ 10th–Sept. 6th (Balkans, Turkey, Greece).—Ninth Annual Congress of the Association Internationale de Perfectionnement Scientifique (A.P.M.).
„ 11th–18th (Cracow).—Eighth Esperanto Congress.
„ 12th–17th (Boston, U.S.A.).—Ninth International Otological Con ress.
„ 22nd–27th (The Hague).—Second International Moral Education Congress.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Dr. A. V. Harcourt: On the Variation with Temperature of the Rate of a Chemical Change; with an Appendix by Prof. W. Esson.—Dr. C. Chree: Some Phenomena of Sun-spots and of Terrestrial Magnetism.—Sir W. N. Hartley and Mr. H. W. Moss: On the Ultimate Lines and the Quantities of the Elements producing the Lines in Spectra of the Oxyhydrogen Flame and Spark.—Mr. E. Marsden and Mr. C. G. Darwin: The Transformations of the Active Deposit of Thorium (communicated by Prof. E. Rutherford).—Mr. W. Wilson: On the β Particles Reflected by Sheets of Matter of Different Thicknesses (communicated by Sir J. J. Thomson, O.M.).

ROYAL SOCIETY OF MEDICINE, 15, Cavendish-square, W. (temporary address during building of new house).

THURSDAY.
NEUROLOGICAL SECTION (Hon. Secretaries—Wilfred Harris, T. Grainger Stewart): at 8.30 P.M.
Annual Meeting—Election of Officers and Council for ensuing year.
Dr. R. C. Jewesbury and Dr. W. W. C. Topley: Pathological Changes Found in Voluntary Muscle in General Diseases.
Mr. Walter Edmunds: The Changes in the Central Nervous System resulting from Thyro-parathyroidectomy.

FRIDAY.
GENERAL MEETING OF FELLOWS at 4.45 P.M.
Election of Candidates for Fellowship.

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.

TUESDAY.—8.15 P.M., General Meeting. Mr. W. D. Butcher: The Education of the Brain, considered as an Electrical Machine (illustrated by lantern slides).

UNITED SERVICES MEDICAL SOCIETY, Royal Army Medical College, Grosvenor-road, S.W.

WEDNESDAY.—5 P.M., Lt.-Col. J. F. Donegan, R.A.M.C.: Demonstration of a Field Operating Table.—Major F. E. Freemantle, R.A.M.C.(T.) and Major C. Smith, R.A.M.C.(T.): The Sanitary Service of the Territorial Force.

HARVEIAN SOCIETY OF LONDON, Stafford Rooms, Titchborne-street, Edgware-road, W.

THURSDAY.—8.15 P.M., Clinical Evening. Cases will be shown by Dr. Willcox, Mr. Fitzwilliams, Mr. Cope, and others.

WIMBLEDON AND DISTRICT MEDICAL SOCIETY, Johnston's Rooms, 6, Broadway, Wimbledon.

FRIDAY.—9 P.M., Members' Clinical Evening and Annual General Meeting.

OPHTHALMOLOGICAL SOCIETY, Theatre of the Royal Dublin Society, Dublin.

SATURDAY.—10 A.M., Papers:—Dr. Lediard: Melanotic Sarcoma of the Choroid with General Metastasis.—Mr. B. Harman: A New Operation for Squint—Subconjunctival Reefing and Advancement.—Dr. Werner; Cases of Disease of the Pituitary Body without Acromegaly.—Mr. H. H. B. Cunningham: Fusion Pictures. 11.30 A.M., Cases and Card Specimens will be shown at the Royal Victoria Eye and Ear Hospital.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. J. Galloway: Clinique (Skin). 5.15 P.M., Lecture:—Dr. T. D. Lister: Tuberculin in Out-Patient Practice.
TUESDAY.—4 P.M., Dr. G. Rankin: Clinique (Medical). 5.15 P.M., Lecture:—Dr. C. R. Box: Measles.
WEDNESDAY.—4 P.M., Mr. A. J. Walton: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. J. Blumfeld: The Avoidance of After-effects from Anæsthetics.
THURSDAY.—4 P.M., Dr. F. J. Poynton: Clinique (Medical). 5.15 P.M., Lecture:—Mr. P. L. Mummery: Pruritus Ani.
FRIDAY.—4 P.M., Dr. G. C. Cathcart: Clinique (Ear, Nose, and Throat).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye.
TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 11 A.M., Mr. Etherington-Smith: Demonstration of Minor Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. S. Taylor: Cirrhosis of the Liver.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women. 5 P.M., Lecture:—Dr. Bernstein: Blood Examination—Morphology.
THURSDAY.—10 A.M., Dr. Simson: Gynæcological Demonstration. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. Baldwin: Practical Surgery. (Lecture I.)
FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Bernstein: Clinical Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Mr. Pardoe: Clinical (Urinary Surgery).
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. Bishop Harman: Diseases of the Eye. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patient (Mr. B. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. D. Gillies). 3 P.M., Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan).
TUESDAY.—Clinic: 2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld).; Surgical (Mr. Howell Evans); Gynæcological (Dr. A. H. Giles). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting). 4.30 P.M., Special Demonstration:—Dr. G. N. Meachen: Selected Skin Cases.
WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., X Rays (Mr. W. Steuart); Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan). 5.30 P.M., Eye Operations (Mr. Brooks).
THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. H. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 4.30 P.M., Special Demonstration:—Dr. G. P. Chappel: Illustrative Medical Cases.
FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. B. Gillespie); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie); Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan).

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Mr. Turner: Surgery. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4.30 P.M., Mr. B. Lake: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.
TUESDAY.—2 P.M., Operations. 3.15 P.M., Dr. R. Wells: Medicine. 2.15 P.M., Mr. R. Carling: Surgery. 4.15 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.
WEDNESDAY.—2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.
THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat. 4.30 P.M., Dr. W. Steuart: Radiography.
FRIDAY.—11 A.M., Dr. A. Davies: Pathological Demonstration. 2 P.M., Operations. 2.15 P.M., Sir J. Rose Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Special Lecture:—Sir John Bradford: Sciatica.
SATURDAY.—Out-patient Demonstration:—10 A.M., Surgical and Medical. 11 A.M., Eye.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—6 P.M., Dr. W. Hampson: Electricity—Static Current.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street Piccadilly, W.

MONDAY.—5 P.M., General Meeting.
TUESDAY.—3 P.M., Mr. F. B. Browne: Insect Distribution, with Special Reference to the British Islands. (Lecture II.)
THURSDAY.—3 P.M., Prof. J. N. Collie: Recent Explorations in the Canadian Rocky Mountains. (Lecture II.)
FRIDAY.—9 P.M., Prof. W. Stirling: The Gaumont Speaking Cinematograph Films (illustrated by the aid of M. Gaumont).

ANCOATS HOSPITAL, Manchester.

THURSDAY.—4.15 P.M., Dr. F. C. Moore: Gastro-Intestinal Hæmorrhage. (Post-Graduate Clinic.)

MANCHESTER ROYAL INFIRMARY.

TUESDAY.—4.30 P.M., Dr. Reynolds: Demonstration of a Case of Tumour of the Lung and of a Case of Paraplegia. (Post-Graduate Clinic.)

FRIDAY.—4.30 P.M., Mr. Thorburn: The Surgery of the Gall-bladder. (Post-Graduate Clinic.)

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (6th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.).

TUESDAY (7th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London, (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.), Royal National Orthopædic (9.30 A.M. and 4 P.M.).

WEDNESDAY (8th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's 2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (9th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal National Orthopædic (9 A.M. and 3.30 P.M.), Royal Ear (2 P.M.), Children Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (10th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Royal National Orthopædic (3.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (11th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic (2 P.M.), Hospital operations are performed daily.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 1st, 1912.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
April 25	30·26	N.E.	...	116	62	44	47	0	Fine
,, 26	30·07	N.E.	...	103	63	42	44	46	Overcast
,, 27	29·86	E.	...	97	61	44	45	47	Overcast
,, 28	29·97	N.E.	...	109	55	42	43	45	Cloudy
,, 29	30·05	N.E.	...	103	52	42	42	46	Cloudy
,, 30	30·30	N.E.	...	115	57	40	44	48	Fine
May 1	30·24	S.W.	...	108	63	46	46	50	Fine

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